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APRIL 1957

Work Scholarship Plan

Television as a Teaching Medium

The Six Problems of Top Management

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What's New in Food Processing

FINE ARTS BUILDING, BOB JONES UNIVERSITY, GREENVILLE, S.C. (page 46)

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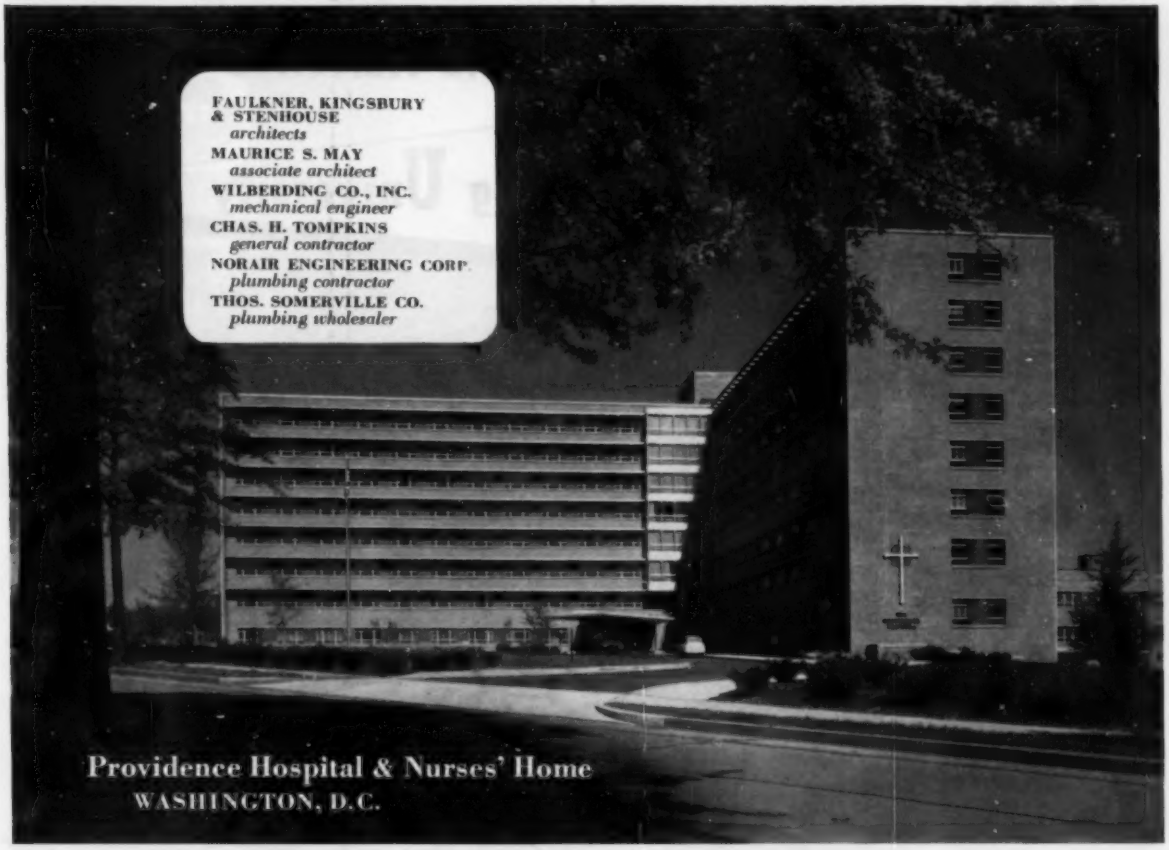

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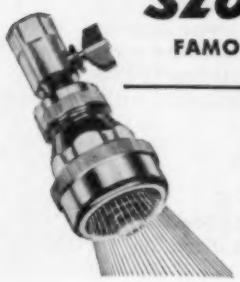

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Among the Authors

Arthur H. Kiendl Jr.

ARTHUR H. KIENDL Jr., associate dean of the college at Dartmouth College, Hanover, N. H., writes on the function that residence halls can perform as part of the liberal arts program (*p.* 36). Most of Mr. Kiendl's professional career has been at Dartmouth, his first post being assistant to the dean of the college. For an interval of 18 months he served as director of housing and director of student activities at the University of Chicago. During World War II, Mr. Kiendl was a captain in the air force and had two years' service in China and India. However, New England is his favorite habitat. During his undergraduate days, he was on the crew of the Dartmouth Rowing Club.

John C. Bramer Jr.

JOHN C. BRAMER Jr., business manager of Western Theological Seminary at Pittsburgh, looks upon the granting of scholarship aid as a boon to the institution rather than a burden (*p.* 38). He has been in his present post for the last four years. Prior to that time he was credit manager for a business organization in Pittsburgh and earlier served as service supervisor for a life insurance company in Pittsburgh. In 1953 his significant research on "Corporate Giving in Allegheny County" was published, out of which came formation of the Pennsylvania United Theological Seminary Foundation, Inc. Originator of this idea, he was one of the incorporators, and now serves on the board of directors. His hobby is flying and he has a private pilot's license.

Wendell E. Hulcher

WENDELL E. HULCHER, staff supervisor of financial and merchandising planning at the Edsel Division of the Ford Motor Company, hurls at top college and university administrators some challenges on management (*p.* 42). Prior to his present position, he was an associate with a management consulting firm conducting studies in management improvement in education and in federal and state governments. His World War II service included that as a pilot and air force officer, and during the Korean War he was in the controller's office in the Pentagon.

O. C. Carmichael Jr.

OLIVER C. CARMICHAEL Jr., president of Converse College at Spartanburg, S.C., and formerly executive director of Vanderbilt University's development foundation, describes the work being done at the Radioactivity Research Center at Vanderbilt with which he was formerly associated. He states the problems in designing such a facility on page 48. Dr. Carmichael became president of Converse College in 1956. For three years he was dean of students at Vanderbilt University before taking on the development foundation assignment. He has a degree from Duke University Law School. During World War II, he developed recommendations, while a navy officer and immediately thereafter, for rectifying certain inequities in the navy discharge system.

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QUESTIONS AND ANSWERS

Auditing Student Funds

Question: We are in the process of reorganizing student organization funds. Do most universities charge a fee for audit and supervision of these accounts? If so, what is the average service charge, and how is it determined by the majority of the institutions?—L.S., Ark.

ANSWER: The question as to whether most universities charge for audit and supervision of student organization funds, and how the charge is determined by the majority of institutions, can be answered accurately only by a survey. Since practices range from no charge to almost full charge for direct services, the administration of each institution perhaps can best determine what policies would be most advantageous on its own campus.

Effective supervision of funds of student organizations is helpful to both students and institution. Student treasurers learn, perhaps for the first time, the task involved in handling other people's money and the necessity of accurately accounting for such funds; student members of organizations are given assurance that funds will be handled properly; finally, the university is protected from criticism by the public, parents and merchants if it maintains adequate supervision.

Since students profit by adequate audit and supervision, it would appear proper to make some charge for these services. However, since some benefit also accrues to the college or university, it would appear equitable for the institution to share the cost with student organizations. The fee might be established as a per cent of cash receipts—1 per cent or less.

However, consideration should be given to organizations that collect dues in substantial amounts only for transmittal to national headquarters. A minimum charge for the account, plus a charge for each deposit or check, similar to banking practice, also might receive consideration. The charges could be established on a share-the-cost basis.

Perhaps a local accounting firm would be willing to cooperate with the institution by estimating the cost of supervision and audit on a commercial basis. The college or university could use such an estimate as a base and decide upon the amount of the cost that could be borne by the institution.—RAYMOND W. KETTLER, *controller, Regents of the University of California.*

Formulating Policies

Question: To what extent should university policy formation be formulated by the faculty?—I.B., Ala.

ANSWER NO. 1: Policies affecting the curriculum or the personal and professional interests of the faculty should either be formulated and proposed by the faculty to the administration or proposed by the administration and submitted to the faculty for judgment and review.

This is a practical implementation of the principle of democracy. In educational organization, however, so great a responsibility finally rests upon the administration with reference to policies and procedure that it should be accorded the right of final authoritative decision and pronouncement.—EARL E. HARPER, *director, school of fine arts and Iowa Memorial Union, State University of Iowa.*

ANSWER NO. 2: It is our belief that the faculty, staff and students should work closely together in the formulation of policy in order to have proper cooperation in getting policies carried out. A person who has had a voice in formulation will be more willing to help enforce and cooperate with a policy than one who has not been consulted in any way.

We have special standing committees representing either faculty or students, or both, that help with these policies. Some of these committees are: admissions, athletics, faculty-student relations, foreign students, scholarships, student affairs, student health, and faculty council, to name a few. We believe a well informed faculty is a loyal faculty.—HAROLD W. JORDAN, *director, Indiana University Memorial Union.*

If you have a question on business or departmental administration that you would like to have answered, send your query to COLLEGE and UNIVERSITY BUSINESS, 919 North Michigan Avenue, Chicago 11, Ill. Questions will be forwarded to leaders in appropriate college and university fields for authoritative replies. Answers will be published in forthcoming issues. No answers will be handled through correspondence.

Federal, Foundation Support

Question: What effect does government and foundation support have upon other sources of funds?—J.C., Minn.

ANSWER: It is not believed that government and foundation support have had any adverse effect whatever upon private sources of funds for the support of higher education.

Gifts from foundations, especially those of substantial size, such as the Ford Foundation gifts, tend to produce support from other sources. A large foundation grant to an institution is usually regarded as a "commendation" of the institution. This brings it to the attention of other donors and can increase support from private sources.

On federal government support, we probably have not had sufficient experience with direct government grants for buildings or operating funds really to know the effect. Certainly government sponsored research, which has become very large at a number of institutions, does not seem to be affecting gifts and bequests from donors. As a purely practical matter, moreover, it is not believed that government grants for buildings, such as are contemplated under the medical facilities research program or other similar programs that might be approved in the future, will have an adverse effect on other support.—JOHN F. MECK, *treasurer and vice president, Dartmouth College.*

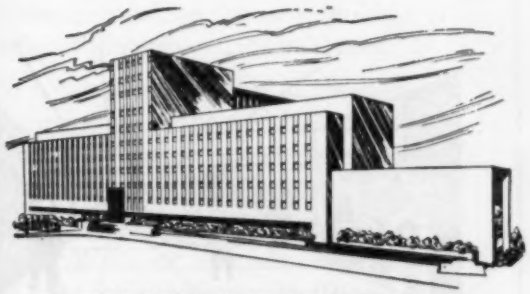
Millions of dollars for colleges and universities

ON THIS PAGE
AND THE FOLLOWING TWO PAGES
ARE SEVERAL EXAMPLES OF THE MANY
SUCCESSFUL FUND-RAISING CAMPAIGNS
KETCHUM, INC. HAS CONDUCTED
FOR GROWING COLLEGES AND UNIVERSITIES.

NORTH CAROLINA WESLEYAN COLLEGE
Rocky Mount, North Carolina

Pledged: **$2,050,000**

In a really outstanding campaign to establish a liberal arts college at Rocky Mount, the citizens of that community raised more than two million dollars against an objective of $1,750,000. Two previous campaigns for this purpose had failed. General Chairman Arthur L. Tyler wrote: "I cannot commend (your director's) work too highly. He has done a remarkable job and we are deeply indebted to him."



UNIVERSITY OF PITTSBURGH
Pittsburgh, Pennsylvania

Pledged: approximately **$12,102,000***

University officials, business executives, community leaders, and hundreds of volunteers recently united in a campaign which raised many millions of dollars for the Schools of the Health Professions at the University of Pittsburgh. Pittsburgh industry subscribed to this cause what is believed to be one of the largest amounts ever contributed by industry to private medical education. Ketchum, Inc., is proud to have served as fund-raising counsel.

*As of August, 1956

HIRAM COLLEGE

Hiram, Ohio

Pledged: **$610,000**

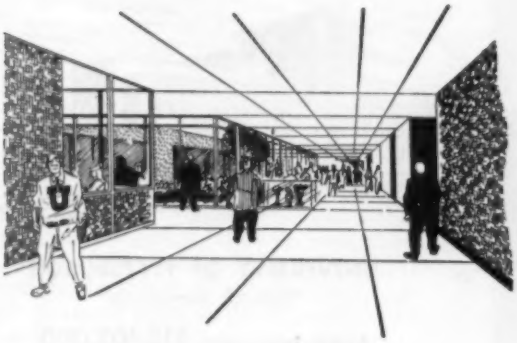
A new women's dormitory and a new physical education building were desperately needed by this growing church-related college (Disciples of Christ). Of Ketchum, Inc. and the development fund campaign which surpassed its $600,000 objective, Howard S. Bissell, President of the Board of Trustees, said: "For this achievement and your help and direction in attaining it, we are indeed grateful to you and your staff."

UNIVERSITY OF ROCHESTER

Rochester, New York

Pledged: **$8,200,000**

This first stage of a long-range development program endeavored to provide the means to merge the University's three separate campuses, add more faculty members and strengthen the student development program. Of the part Ketchum, Inc. played in this campaign, President C. W. deKiewiet said: "The University has gained in stature in the eyes of all, which should be taken as a tribute to your organization."



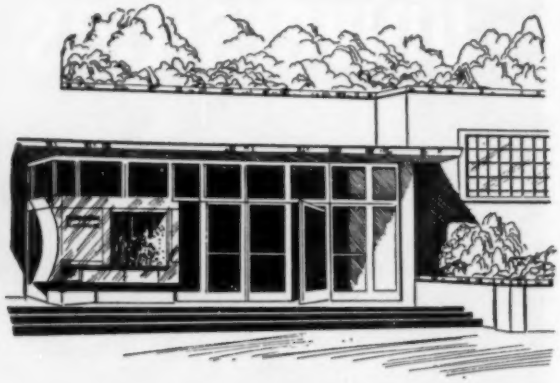
ALTOONA UNIVERSITY CENTER

PENNSYLVANIA STATE UNIVERSITY

Altoona, Pa.

Pledged: **$556,655**

In this unusual campaign, the greater portion of the $550,000 goal had to come from the community and its industry. While the Center received no support from the state, its affiliation with a state-supported university created that impression. The solution of this public relations problem was the key to campaign victory.



MOUNT UNION COLLEGE

Alliance, Ohio

Pledged: **$1,820,000**

In setting the stage for this development program resulting in five new buildings, almost every type of campaign technique was employed. William C. Wesley, Vice President and Dean, says of Ketchum, Inc: "Mount Union College was very fortunate in securing your services . . . a major part of the success of the campaign is due to the efforts of your organization."

WORCESTER POLYTECHNIC INSTITUTE
Worcester, Massachusetts

Pledged: **$1,183,000**

Able leaders, with Ketchum guidance, conducted this campaign in order to continue WPI's 80-year record of high educational standards. The funds were to be used for faculty salaries, expansion of Civil Engineering facilities and for maintenance and repairs of several existing buildings. Campaign Chairman Andrew B. Holmstrom says of Ketchum, Inc: "I cannot give too much praise to your staff."

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2. It provides periodic counsel in cooperation with and to heighten the effectiveness of your own development staff.
3. It helps your staff to develop effective techniques for annual and special campaigns.
4. It directs intensive campaigns for new buildings, endowments, and faculty salary increases.

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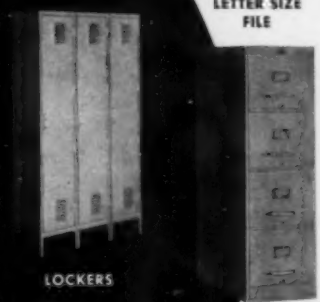

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There's an ASE Dealer Near You

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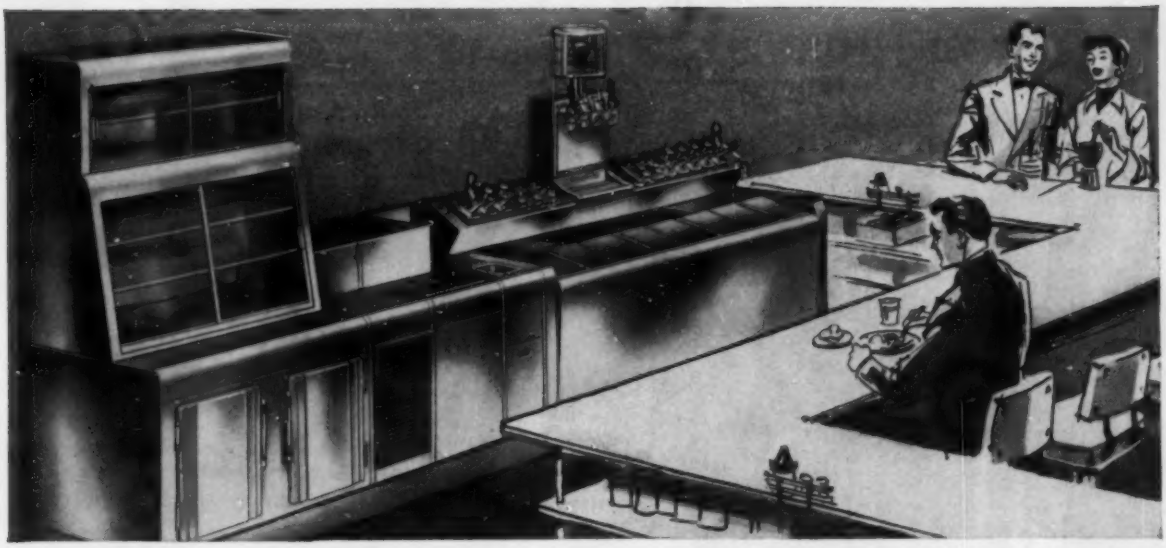

Right line to efficient food service

In counter restaurants and soda fountains everywhere—in motels, drive-ins, snack shops, college union buildings, recreation centers, drugstores—you'll find Bastian-Blessing stainless steel equipment first in favor. The reasons are important.

With Bastian-Blessing, quality comes first. Every item carries the seal of approval of the National Sanitation Foundation. Compare the equipment with other makes. You can see, feel, hear or measure the quality difference. Owners find that it lasts longer than other makes, too—takes less effort and expense to maintain.

It's obvious that a complete line from a single source makes for neater, cleaner appearance and better operating efficiency. Bastian-Blessing makes everything including the counter, and offers you a complete planning service to help you make the most of every unit, whether you are remodeling, expanding or starting from scratch.

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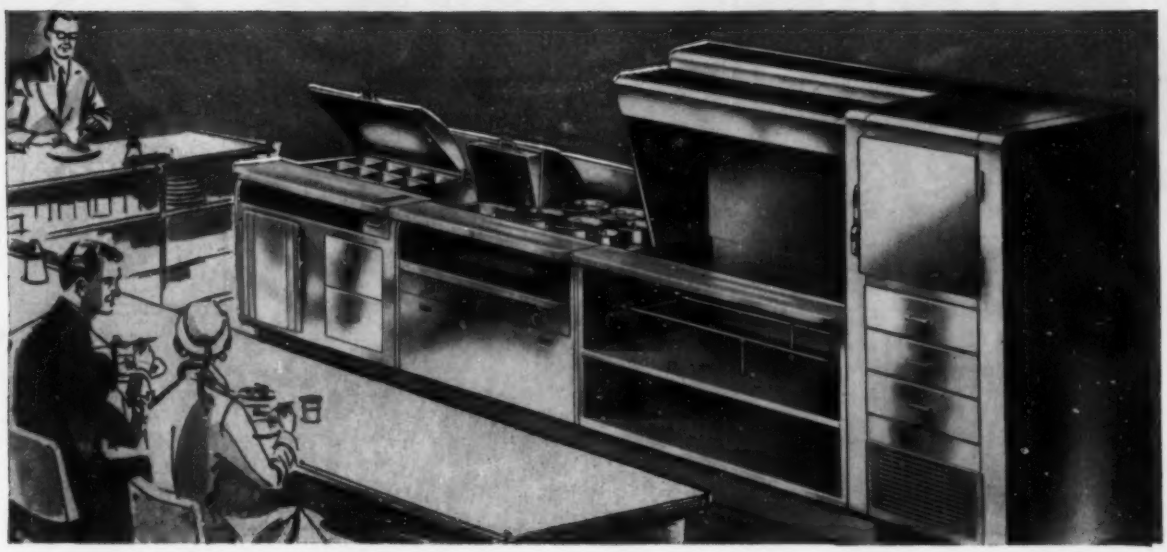
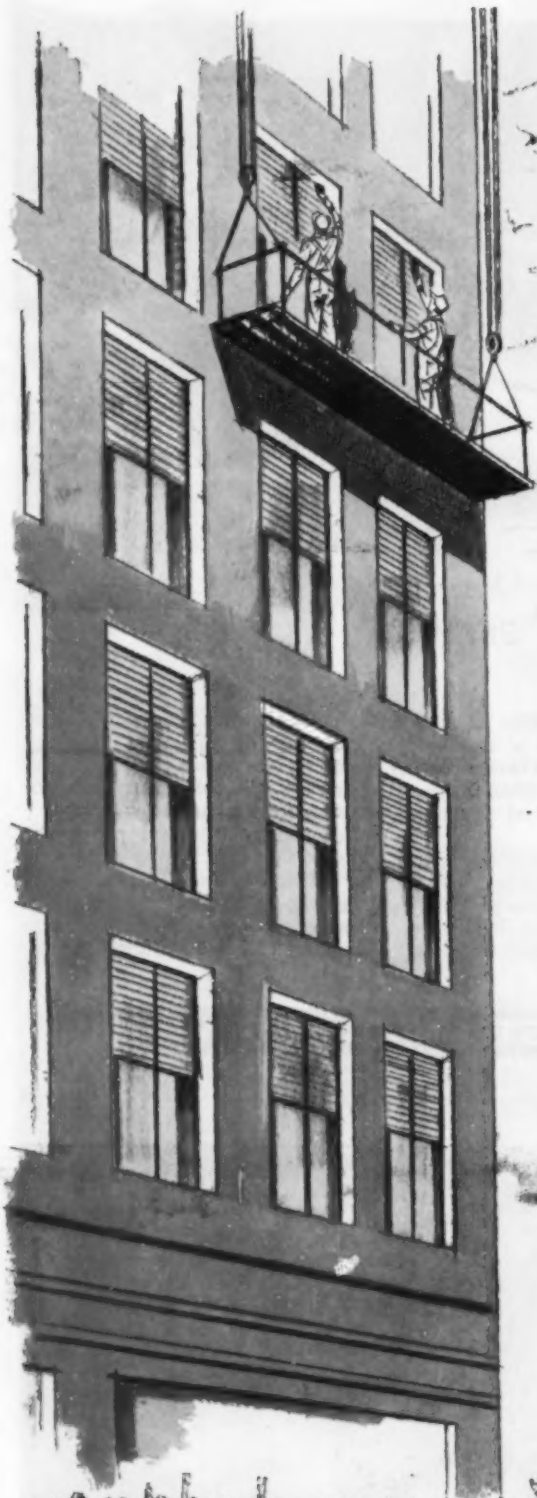
Your best buy **BASTIAN-BLESSING**

World's largest manufacturer of fountains and counter food service equipment.





WAY ABOVE THE CROWD

People in the average sidewalk crowd have very little conception of the chemical miracles that a bucket of paint might contain. To them paint is paint and "don't let it drop in your eye."

But in the paint industry's largest laboratories, Devoe scientists keep up an everlasting war on surface corrosion, wear and tear and all the other elements that add to paint maintenance expense. The happy result is a modern array of surface finishes in a veritable garden of hues, whose lasting qualities on schools, hotels, office buildings, any type of building . . . are so good that the cost-per-year goes down to a very surprising low.

AMONG THE RECENT DEVOE DEVELOPMENTS:

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- **Epoxy finishes** that set new high marks for both wear and corrosion resistance.

Ask your Devoe representative to show you why Devoe products are "above the crowd."

DEVOE

203 years of paint leadership!

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Trim Line

HEYWOOD-WAKEFIELD

EST. 1826

Chrome-Plated Tubular Steel School Furniture

NOW AVAILABLE WITH — **SOLID WOOD ★ LAMINATED PLASTIC ★ HEYWOODITE SOLID PLASTIC**

ONLY HEYWOOD-WAKEFIELD *Trim Line* OFFERS YOU THIS COMPLETE SELECTION

- **Solid wood** desk and table tops, chair seats and backs, and tablet arms.
- **Laminated Plastic** desk and table tops, and tablet arms.
- **HeyWoodite Solid Plastic** desk tops, chair seats and backs, and tablet arms. HeyWoodite, an exclusive Heywood-Wakefield development, is a single homogeneous piece of solid plastic of smooth, virtually indestructible construction.
- **Five Book Box Colors,** each harmonizing beautifully with natural wood, laminated plastic or solid plastic seats and tops.
- All units made with Heywood's ⅝ inch tubular steel frames, lifetime-plated with durable chrome. Strong and light in weight, Trim Line furniture pays for itself in maintenance saved.

ONLY HEYWOOD-WAKEFIELD *Trim Line* OFFERS YOU THIS COMPLETE RELIABILITY

HEYWOOD-WAKEFIELD
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- ★ 131 years of experience, research and design skills.
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- ★ A dependable source for additional equipment or replacement units.
- ★ Responsibility at start of order through installation and always at your service.

AUDITORIUM AND PORTABLE SEATING

For generations, Heywood-Wakefield has been a leading factor in the manufacture of comfortable auditorium seating designed for long life and low maintenance cost. The attractive models shown here have proven themselves in schools from coast to coast. All chairs are available in a wide range of wood and metal finishes and a variety of beautiful, durable upholstery fabrics.

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HEYWOOD-WAKEFIELD
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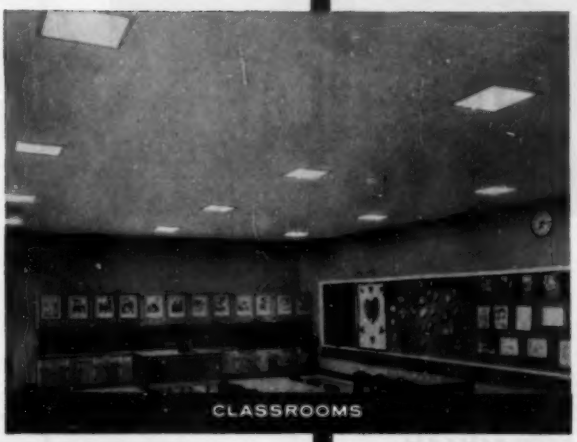
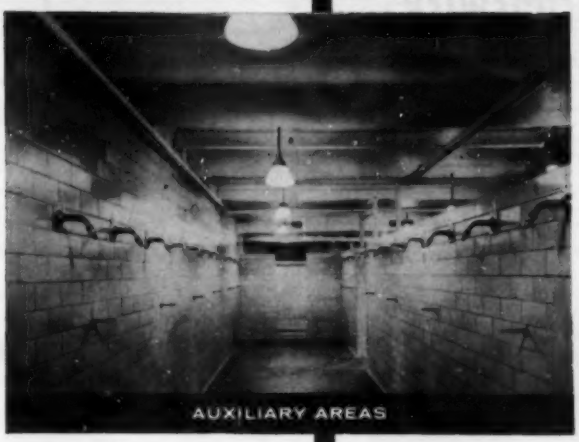
Custom-Engineered

LIGHTING For Every School Need

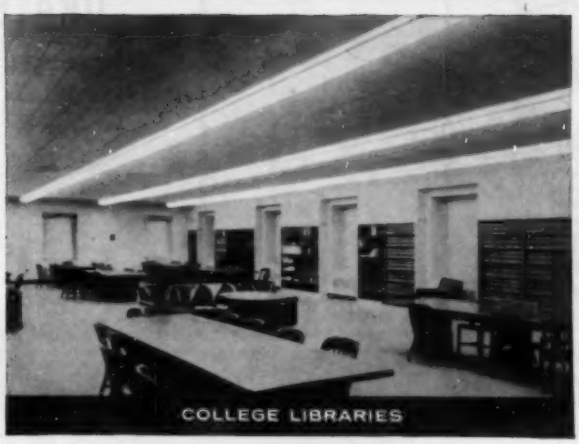


CLASSROOMS

CORRIDORS



AUXILIARY AREAS



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For Sixty Years Holophane Has Pioneered in the Field of Educational Lighting . . .

Technological knowledge acquired through six decades of experience, plus the constant development of new and better units, make Holophane the recognized leader in school lighting . . . Holophane research has kept pace with each advance in educational methods . . . Holophane luminaires are the basic components of *custom-engineered* lighting systems that provide the specific illumination required in every area of the modern school or college . . . The Holophane engineering staff offers authoritative counsel, in cooperation with architects and engineers, on any educational lighting project.

HOLOPHANE COMPANY, INC.

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THE HOLOPHANE CO., LTD., 418 KIPLING AVE. SO., TORONTO 14, ONTARIO

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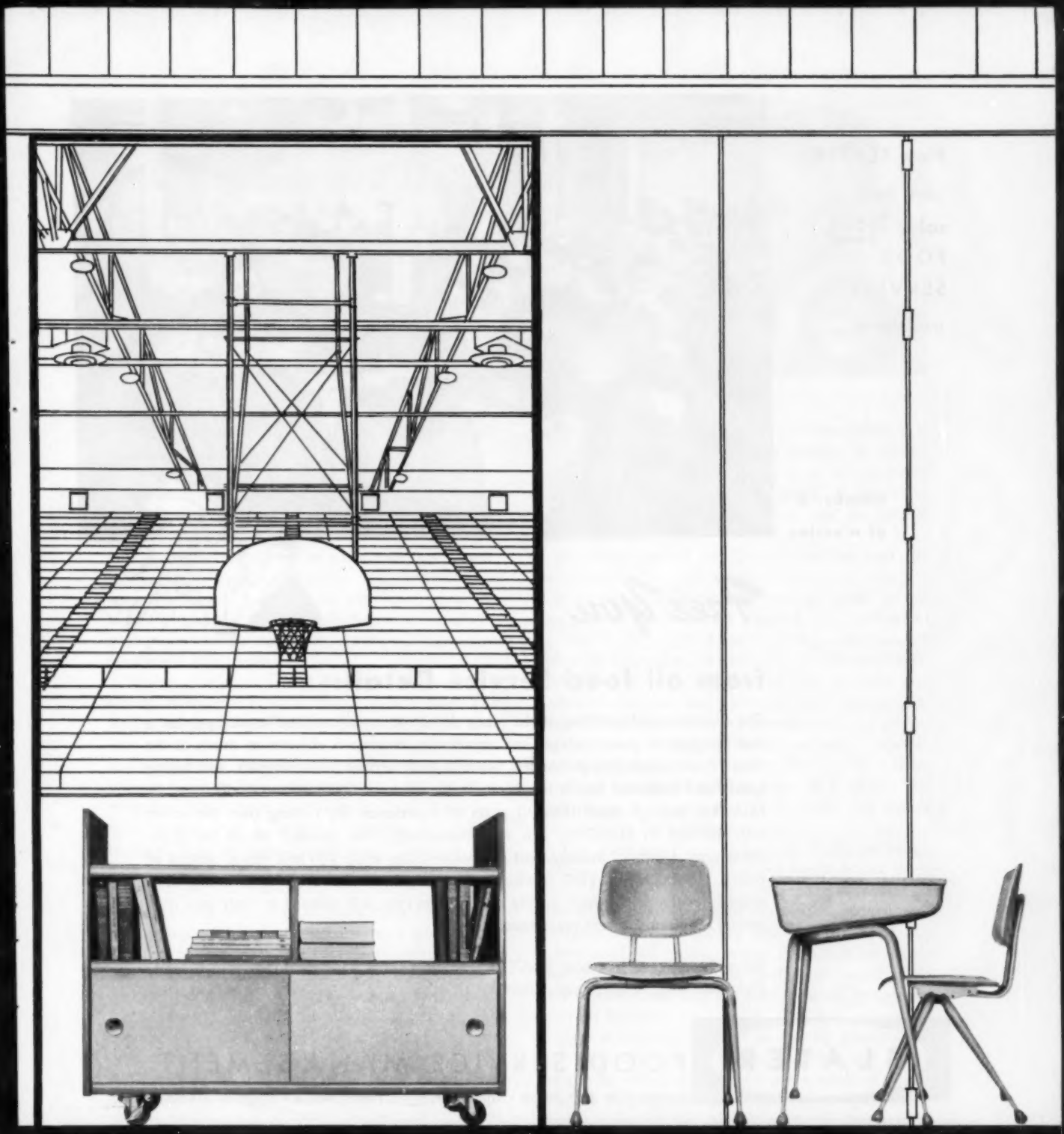
Nobody knows school equipment like Brunswick

If your school problem involves seating or storage, your Brunswick representative can help you find the answer. He brings you the broadest line of equipment in the educational and recreational field. He brings you the advantages of working through a single source. And he brings experience that proves nobody knows school equipment like Brunswick. All *you* need do is write: The Brunswick-Balke-Collender Company, 623 South Wabash Avenue, Chicago 5, Illinois.



CLASSROOM FURNITURE • MOVABLE CLASSROOM CABINETS • FOLDING GYM SEATING

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JUST ONE LINE CONTINUES TO SET THE PACE . . . IT'S **Brunswick**

How SLATER can help solve *your* FOOD SERVICE problems . . .

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The direction and handling of the many details of a student food service present a real problem to many colleges and universities because it absorbs so much of the time of administrative personnel. Student food service is a complex and highly specialized endeavor which has been developed to a high degree of efficiency by SLATER through more than 30 years of experience. By turning over the entire responsibility to SLATER, you will immediately free yourself of all the time-consuming details of management and supervision while you still retain control of policy. Although SLATER service is based upon centralized control and proven procedures that insure high quality at minimum cost, it is tailored to meet your own special requirements and preferences.

We will gladly explain how SLATER can help solve *your* food service problems, if you will write or telephone collect.

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GUEST EDITORIAL

Advertising and the Needs of Higher Education

JOHN R. EVERETT
President, Hollins College, Hollins College, Va.

IT IS AN EXCITING AFFAIR WHEN GROUPS OF INdividuals wholly unrelated to professional higher education become seriously concerned with colleges and universities. This concern is not so much in terms of what is being taught as with the possibility that too small a percentage of the future American public will have a chance at educational excellence. Industrial, business, professional and governmental leaders all have come to the conclusion that the higher educational resources of the country must be improved and expanded unless we are willing to face a national catastrophe.

Higher education always has had its champions among all segments of American society. Men and women of great wealth have given billions of dollars to construct and endow hundreds of colleges and universities. Alumni and others have used their surplus funds to help scholarship students, building programs, and current operations budgets. State and local governments have spent countless tax dollars to build large and small institutions. Churches also have produced money for all kinds of higher education.

Most of this outpouring of funds has come because the managers of higher education have gone to the legislatures, the churches, the philanthropists, alumni and friends with a direct appeal for sufficient money to keep going. Fund raising campaigns have dotted the histories of virtually all private institutions, and most of them have had at least a reasonable degree of success.

In spite of all the fund raising labors of the past and present, our higher educational resources are approximately *one-half* of what we will need by 1967! In 10 years our capacity to serve college and university students must double or every business, every profession, and every service that requires educated brain power will suffer dangerous shortages.

These considerations have led a group of America's outstanding businessmen to the conclusion that higher education's problems must be dramatically and forcefully stated to all of the nation's people. The citizens of these United States must become aware of the fateful challenge of a rapidly increasing population and of our absolute dependence upon well educated brains. It is no longer possible to depend simply upon the individual activities of college presidents and their helpers. The task is too enormous and the stakes are too high. And, also, the time is much too short.

At the request of the Council for Financial Aid to Education, the Advertising Council was asked to take on the job of getting the message to the American people. Through the donated time and talent of the N. W. Ayer Agency, through the donated space in magazines, newspapers and transportation companies, through the donated time of radio and television stations and sponsors, and through the donated time and brains of businessmen and educators, the story is being fashioned and will be spread. Millions of dollars have become involved and thousands of man-hours already have been spent. The first phase of the campaign will begin this month and continue for at least two years.

The same story is told in each of the advertisements. Reduced to its simplest terms it has three parts: (1) the importance of higher education in developing our nation and the utter dependence of everyone upon its quality and quantity; (2) the prime need for raising faculty salaries if we are to maintain and enhance the qualitative contributions of our institutions; (3) the need for greatly expanded physical facilities.

This advertising will do no special pleading for any particular kind of higher education, nor will it make any special appeal for a given mode of financing. It will be concerned, initially at least, solely with convincing the American people that one of their most cherished possessions is in real danger of losing its ability to serve their highest needs and aspirations.

In addition to the hopes we all have for the success of this advertising program, it must be recognized that everyone interested in education will have to redouble his efforts to get money. All that can be reasonably expected of the advertising is that it will give an effective national backdrop for those responsible for financing higher education.

LOOKING FORWARD

Space Utilization Studies

THE ADMINISTRATORS MOST FREQUENTLY IGNORED on a college campus are those who vainly strive for a reevaluation of utilization of their institution's facilities. Why?

Numbered among their opponents are those who would rather build a new building than use available ones more effectively. Department heads jealously guard buildings erected to house activities of their departments and discourage any use by other departments, even though the buildings may be half empty most of the time.

Opposition to studies of space utilization also comes from those faculty members who resent the possibility that comfortable and traditional hours of teaching may be altered. For some reason, most classes meet in the morning, with the exception of laboratory sessions.

Within recent months some institutional administrators have come to grips realistically with the problem of handling larger numbers of students by more effective use of present facilities and by accurate determination of future needs. An outstanding example of such research has been going forward at the Consolidated University of North Carolina under the direction of William C. Friday, president. Studies have been conducted at the University of North Carolina at Chapel Hill, at North Carolina State at Raleigh, and at the Women's College of North Carolina at Greensboro. As a result, future plans for buildings at the various campuses are being modified and "empire building" by various departments is being seriously challenged.

Dr. Clarence Faust of the Fund for the Advancement of Education, in a recent address before southern college and university business officers, urged administrators to take active and intelligent leadership in making certain that colleges use facilities efficiently. Having been a professor himself at one time, he admitted that many faculty members would be the first to attack any such attempt. The classic tradition of professor-student ratio needs fresh study, he asserted, and genuine curiosity in the use of new teaching technics is needed.

State legislators and private and corporation donors are asking pointed questions as to why college budgets continue to skyrocket. Such legislators and donors may suggest that there is a bottom to the money barrel and that the traditional business-as-usual policy of past years cannot be considered defensible.

College business officers will not find insistence on space utilization studies popular. They are the logical officials to take such a position, as they should know where income and expenses must meet. Who else is better equipped to act?

The Forgotten Colleges

WHEN THE FORD FOUNDATION GRANT OF $300 MILLION was made to more than 600 private colleges a year ago, a large number of colleges were not eligible. They were not eligible because they lacked accreditation by regional accrediting organizations.

The reasons for not having accreditation are varied. In one institution, the endowment is ruled inadequate; in another the library facilities are not considered up to college standards, and in another the faculty does not include a sufficient number who have advanced degrees.

Efforts are being made by a newly formed group known as the Council for the Advancement of Small Colleges to launch a program of education, interpretation and fund development to improve the status of the forgotten colleges. The purpose of this group is to improve the academic standards and financial structure of its constituent members to make certain that quality education is offered and accreditation obtained.

According to the executive director, Alfred T. Hill, "membership in the group is limited to four-year colleges of arts and sciences. It is further characterized by two important considerations: (1) All colleges must have their academic credits approved by their state department of education, state university, and three other institutions at the graduate or undergraduate level holding membership in their regional associations, and (2) they must be officially committed to a program of self-development consistent with membership criteria of the various regional associations and keyed to the emerging demands of higher education."

Under vigorous leadership, the Council for the Advancement of Small Colleges has been successful in getting its story favorably told at many national meetings and reported in magazines of national distribution. The colleges deserve commendation for their efforts, but they still have a long way to go to obtain accreditation. To their credit, they have not attempted to include in their membership institutions of such weak academic performance as not properly to justify the name of "college." In many cases, such institutions would be hard put to justify their existence, and higher education might be better served if they disappeared. The Council for the Advancement of Small Colleges is committed to promoting quality education and is apparently succeeding.

When you utilize its special capabilities, it is a whole new educational technic

TELEVISION AS A TEACHING MEDIUM

P. A. GREENMEYER
Managing Editor, Educational TV News and his associates:

A. F. INGLIS, L. L. LEWIS and V. S. MATTISON

Physicist Arthur H. Compton, executive director of the pioneer educational TV station KETC, declared that the effectiveness of TV in shaping American thought induced him to turn his prime efforts in that particular direction.

ALTHOUGH EDUCATORS GENERALLY ARE AGREED THAT television has great potentialities for their profession, there has been considerable uncertainty as to *how* it will be used. Many have considered it merely as an accessory to existing methods of instruction. On the other hand, other educators have seen television as a means for revolutionizing educational technics—as a means of successfully overcoming the problems facing educators and, at the same time, of increasing the quality of instruction.

In this article we are assuming that course material would be planned and presented to take full advantage of all the potentialities of television. Of course, this is contrary to the concept, sometimes advocated, that consists of placing a camera in the classroom and pointing it at the instructor while he delivers a standard blackboard lecture. Our system would use an originating area designed for teaching by television, would integrate slides, films and other audio-visual aids, and would make frequent use of demonstration experiments and the origination of parts of course material from remote points. In other words, it involves a whole new educational technic.

For several years educators have been conducting experiments to determine whether television can be used with success for classroom education. For the most part these educators, in public and private colleges and in the government services, have been motivated by the pressing problems facing the educator: quality of instruction, shortage of teachers, and pending lack of classroom space. If TV proved successful, the next step would be to answer the question of how best to use it and the equipment to employ.

Now, after several years of experimentation, sufficient evidence is available to give fairly positive answers. From these extensive experiments by educators three basic facts have emerged:

1. Teaching by television compares favorably with the conventional method of classroom instruction and, in certain instances, is much better.

2. The most effective presentation of a subject is made by using a teaching studio rather than by bringing TV cameras into the ordinary classroom.

3. The type of equipment best suited to teaching by television is that which enables the educator to utilize all the potent forces of TV in making his presentation.

We shall consider these three basic facts in more detail.

A number of methods have been used to test the possibilities of teaching by TV, including both "on-air" and

"closed-circuit" classes. In almost all cases, control classes taught by the conventional method were employed. The use of TV has been tested with groups in grade schools, high schools, the armed forces, and the universities. The arts and the sciences, technical and medical subjects have been covered.

The list of experimenters includes the State University of Iowa, the University of Houston, the University of Michigan, and Pennsylvania State University. Others, who have employed both closed-circuit and on-air television, such as Washington University, St. Louis University, and the University of Pittsburgh, are also among the TV pioneers in education. Furthermore, the armed forces made notable contributions through experiments conducted by the signal corps and the Walter Reed Army Medical Center.

The results of these tests are in almost all cases available to the educator, most of them having already been printed and the literature distributed.

These extensive experiments show with one accord that teaching with use of TV can do, at the least, as well as direct classroom instruction. In a number of cases the results indicate that students so taught do better. Usually these results are attributed to the special capabilities of television.

The chief advantage is the one-to-one student-instructor relationship. Every student gets a closeup view of the instructor and his presentation of graphics. It is as though he had a first row seat. Hence, the almost hypnotic effect of concentration, as observed in the entertainment field of television, can be carried over when the medium is properly employed as a teaching vehicle.

In using either the lecture or the discussion method, TV brings the leader closer to the group. For technical subjects, TV diminishes the tendency toward long-winded descriptions, permitting instructor and students to get down to practical "show-how" demonstrations. In general, TV is a good method of obtaining student-instructor intimacy, as well as distributing the talents of a special teacher through more classrooms than could be accommodated by conventional teaching methods.

TEACHING EFFECTIVELY

The employment of television as a teaching medium does not of itself guarantee satisfactory results. Two simple analogies will serve to illustrate this point.

First consider the case of the ordinary blackboard lecture. An instructor does not get desirable results unless he prepares his lecture material in advance for attention-getting and interest-holding presentation. Next take a case in which visual aids such as a series of slides or charts are used. They help best when carefully prepared to illustrate a point and arranged beforehand in a logical sequence so that they forcefully carry the point across. Similarly, when employing TV as a teaching medium, it is best to plan [program] the procedures beforehand, so that a smoothly integrated presentation, without pauses or interference, is the final result.

It is a mistake to assume that merely bringing a TV camera into a conventional classroom, pointing it at a teacher, and placing TV viewers in various other classrooms is going to achieve the full potentialities of the medium. All experimenters tried this method, but the more serious soon progressed to a more satisfactory procedure. They discovered that the restricted size and ceiling height of most classrooms, the lack of camera mobility, and the inadequate lighting facilities made classrooms unsuitable as origination sources.

For best results, an area should be provided specifically for TV, with adequate space, ceiling height, lighting, acoustical treatment, and floor covering. Ideally, it should be adjacent to a property storage room where the demonstration material for many subjects is stored.

Although the motion picture developed out of the legitimate stage, it was not found desirable merely to train a camera on a stage production; instead, a whole new technic was developed, utilizing the special capabilities of the motion picture camera.

Effective educational TV presentations employ all the tools of the modern educative process. These include the workshop, the planned experience, and the symposium—but instruction by TV is not essentially any or all of these. Rather it is the integration of these chosen educational procedures in one smooth and thoroughly integrated presentation.

One educational TV director has put it in these words: "We have found that the most effective way to use television for teaching is to employ the program technic. . . . We must put a beginning and an ending on our presentation. We must integrate graphics—charts, slides and films—in much the same way that the expert does, that is, without the interference of a black screen, the pauses, and other distractions of the inexpert presentation. We must employ the technic of the TV producer in order to achieve the forceful effects of the medium."

This is just another way of saying that a TV teaching studio is the beginning of a TV system that lends itself to effective teaching. From it can emanate high quality pictures and sound. To it can be added all the requirements for demonstrations, graphics and remote sources of origination for presentation to the students.

EQUIPMENT CHOICE

The finest type of television equipment available is none too good for preparing the young people of our nation for future service. Use of high quality equipment opens the way for the latest advances in TV technology to be incorporated into our schools and colleges. It places at the disposal of the educator all of the special technics developed by the engineering brains and skills of the industry. It enables him to choose what he needs—color as well as black and white TV—with both integrated into a single system.

The educator can start with a simple and relatively inexpensive one-camera arrangement or can have a system to serve the entire campus. The range of possibilities with this type of equipment is almost limitless.

To achieve the kind of results an educator wants requires not only a knowledge of TV technics and proper preparation of material but also the kind of equipment that lends itself to obtaining all desirable effects. Hence

the type manufactured for broadcasting stations is found to be most suitable for educational requirements. It affords the facilities demanded by high quality instruction. It gives the teacher and the administrator the widest choice of visual aids with smoothest type of integration. It assures that there will be no lowering of scholastic standards occasioned by the choice of equipment.

Professional equipment lends itself to ease of assembly into a complete TV teaching system. Rather than odd cameras and viewers placed here and there in different rooms on separate floors or in different buildings, this type of installation will forge all individual components into one complete system.

The use of the broadcast type of equipment puts no restriction on the educational offering; programs can be carried to other schools and to distant cities for forums and symposiums. Local stations and TV networks can be connected to put the programs "on air" for wider distribution. Conversely, the properly equipped educational TV system also can be connected into outside networks for receiving and integrating special programs into its own system. By this means a college can serve a wide audience, produce general educational programs, give credit courses to industry, engage in community services that will enhance its reputation, and furnish postgraduate training.

PLANNING TV TEACHING SYSTEM

At the outset it is not necessary to begin with a large TV system. Either a teaching studio can be added or a classroom can be converted into a teaching studio. If a new building is in prospect, a complete TV teaching center can be included in the plans. However, it is essential, in order to get started right, to plan to employ TV as a teaching medium rather than merely as a visual aid.

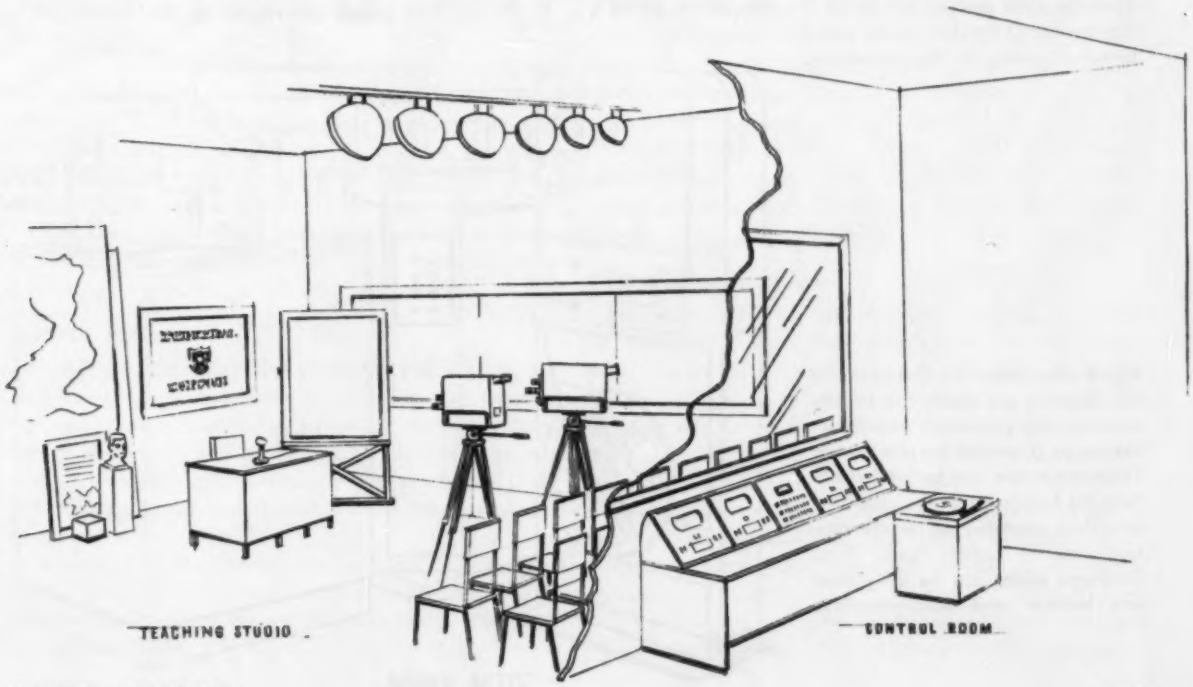
A small TV camera can serve as a useful visual aid in presenting closeups of objects and a magnified view of microscopic specimens, but it is a far cry from a TV teaching system. In using TV as a teaching medium the student always must be thought of in terms of being remote from the teacher. For the student this should mean a continuous, precise flow of information, profusely illustrated, without the annoyance of a dead screen during program changes or the distraction of chopped-off messages.

In general, there will be three types of program origination sources: (1) teaching studios, (2) film and tape rooms, and (3) a wide variety of special or remote locations. In the teaching studio and film room the subject is brought to the camera, whereas in the remote or special location the camera is brought to the subject. Fixed TV equipments are employed for the studio and film areas, while portable and mobile equipment is used for the special and remote locations.

THE STUDIO

The studio is the heart of an effective system. Designed to meet the requirements of good television pictures, it has facilities for enabling the instructor to make a forceful, impressive presentation of his subject. It provides for smooth integration of graphics into the presentation. It brings the widest variety of course material before the

Fig. 1—Television teaching studio. This shows use of an area suitably equipped for teacher demonstrations. In addition, it is designed to establish a climate for good TV pictures. There is ample room for camera movement, provision for sufficient light, space for students, and viewing windows for visitors and, especially, for the control equipment operator. Also shown is an adjoining area for the control equipment (video and audio) separating it from the teaching area. Operation of the switching controls is illustrated in Fig. 2 at the top of the following page.



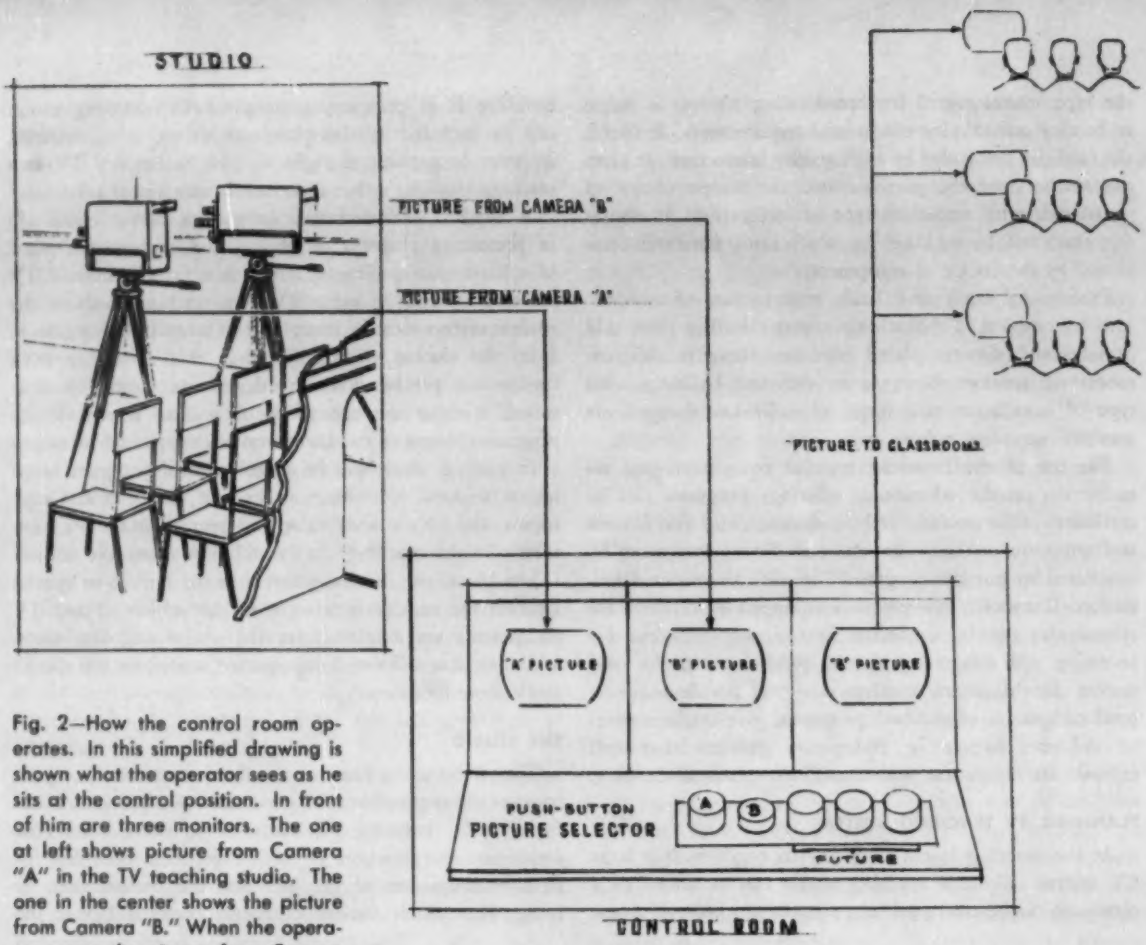


Fig. 2—How the control room operates. In this simplified drawing is shown what the operator sees as he sits at the control position. In front of him are three monitors. The one at left shows picture from Camera "A" in the TV teaching studio. The one in the center shows the picture from Camera "B." When the operator wants the picture from Camera "B" to reach the classroom, he pushes button "B" on the picture selector (switching) panel in front of him. When the picture from Camera "A" should be seen by students, the operator then pushes button "A." The monitor at the right shows which picture is going to the classrooms.

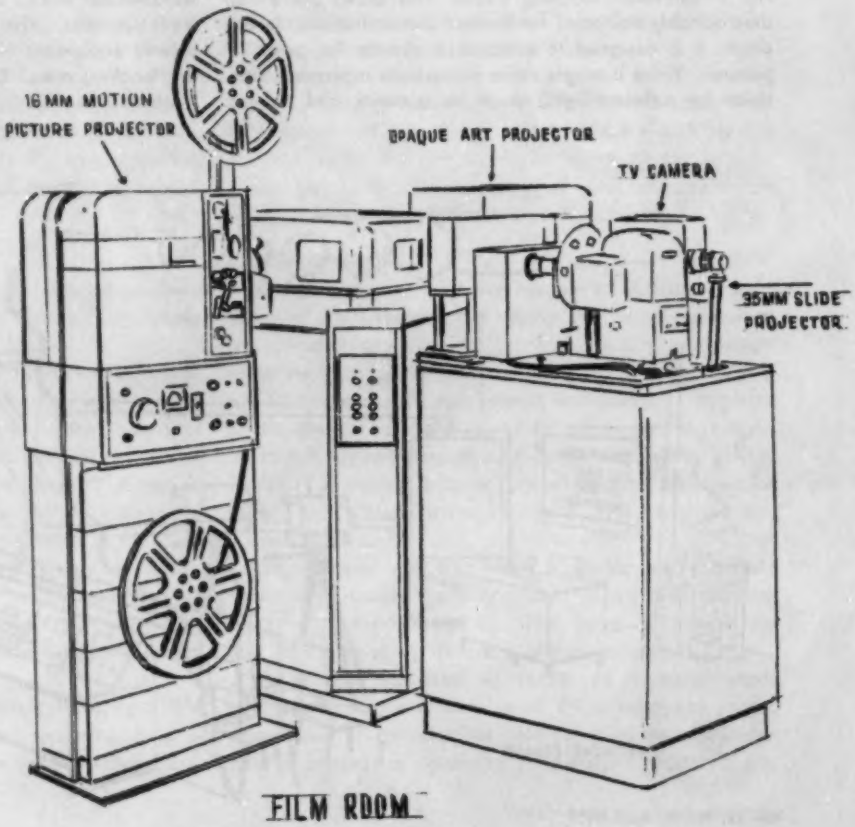
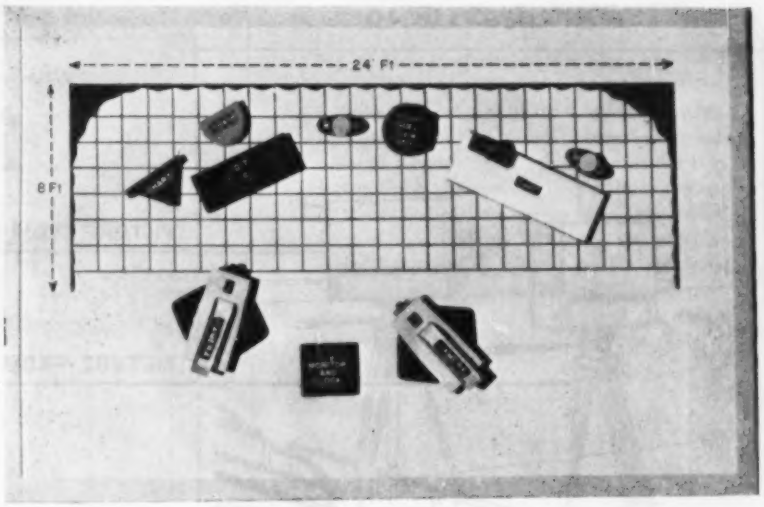


Fig. 3—Equipment for film room. In this drawing are shown the TV film camera and projectors usually installed in a central graphics area. These projectors can be loaded before the beginning of the class day and then operated by remote control from the control room. Thus, films and slides can be integrated into lectures and demonstrations.

The use of miniature models as shown here helps to speed the placing of cameras and teaching accessories. The first step is to procure a floor plan scaled to the size of the studio. Blocked-out area is for instructor's use; open area is for camera movement. This shows the instructor how much area he has to move around in. It enables him to place his equipment, graphics, in the most convenient and effective positions. It also enables him to work out his presentation in considerable detail before rehearsing in the studio. The instructor can do it in his office and does not need to wait on studio people in order to begin planning.



student. The studio designed as a complete unit can be duplicated any number of times according to need, can be expanded as the institution develops, and can be compounded into a complete TV teaching center.

The ideal TV teaching studio contains two or more television cameras, microphones and lighting equipment. Two cameras are needed for sustaining interest by change of pace, for example, shifting from teacher to chart, from closeup to wide view, and so forth. This does not mean, however, that one cannot start with a single camera and then progress to the ideal as conditions warrant.

One wall of the ideal studio should contain a large picture window looking into the control room. Two or three walls can be arranged for teaching as many subjects by use of proper backgrounds. No windows for outside light are required. Special fixtures can be included, such as a demonstration table equipped for such specialized subjects as chemistry and physics.

If only one studio is being contemplated, it probably will be fitted for general use with easily changeable properties and fixtures. As more studios are added, they can be adapted for specialized subjects. In any studio, arrangements should be made for accommodating a small group of students for those instructors who desire an audience.

Overhead lighting arrangements provide for best illumination, and switching equipment can be installed on a near-by lighting panel.

CONTROL ROOM

Closely associated with, and preferably next door to, the teaching studio is the control room, where the program director controls the presentation of subject matter. Camera controls as well as microphone controls frequently are located here. An important piece of equipment is the switching apparatus used to choose the picture to be sent to the classroom (Fig. 2).

In some cases the control area may not be a separate room. However, it is most desirable to partition off the control function from the teaching function so that there are no distractions.

Several sources for TV pictures that tie in with educational needs can be added to the basic teaching studio. A film projecting room, for example, affords a central source for origination of motion picture films, slides and artwork opaques. One TV film room can serve as a projection center for several studios or for an entire institution. Here motion picture projectors, slide projectors, and equipment for reproducing artwork and graphics of all sorts are located. Both 16mm and 35mm apparatus are available (Fig. 3).

In actual operation, projectors are loaded with film and slides according to the daily schedule. The picture and sound are sent from here to the control room, where they can be inserted into a lecture at the proper time by the push of a button. The projectors in the film room can be operated remotely from the control room.

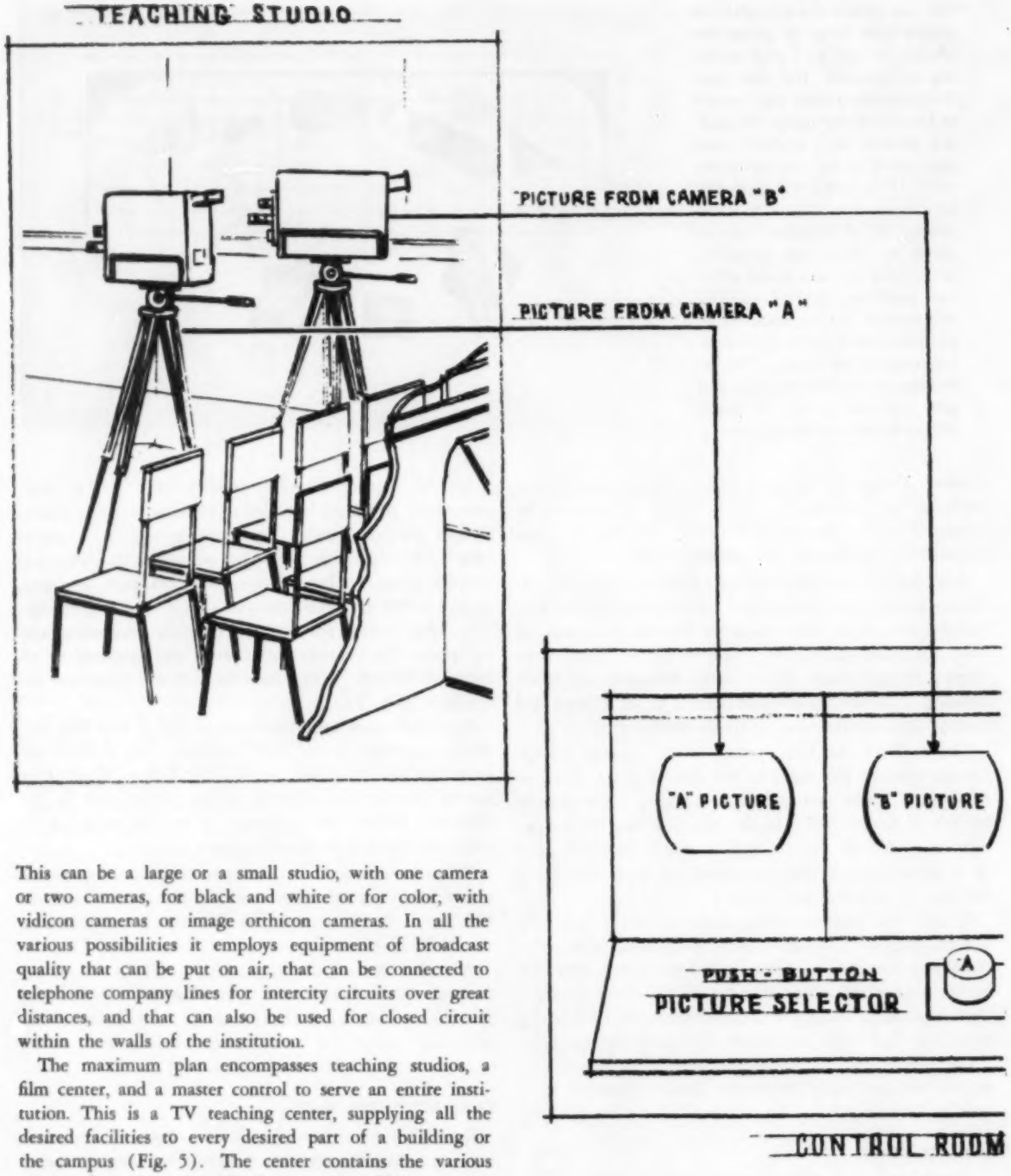
When a film room is used, an additional monitor is placed in the control room to display the picture from the film room. By this means the director can preview the material before sending it on to the classroom.

As other sources of programs are added, the system develops. Additional studios can be added for teaching specialized subjects. A master control room becomes the switching center for distributing pictures and sound throughout the entire institution.

BASIC EQUIPMENT PLANS

Equipment plans depend, of course, upon the scope of the enterprise. To stimulate thinking, we offer two basic plans: the TV teaching studio and the TV teaching center. The first is a plan for one complete teaching studio; this we term the minimum plan (Fig. 1). The second plan is for a teaching center, to serve a building, a department, or an entire university. This is the maximum plan. From these two plans any sized system desired can be formulated, according to present need and consistent with current budget operations, but expansible to any desired proportion.

The minimum plan provides for essential and accessory equipment to equip a TV teaching studio completely.



This can be a large or a small studio, with one camera or two cameras, for black and white or for color, with vidicon cameras or image orthicon cameras. In all the various possibilities it employs equipment of broadcast quality that can be put on air, that can be connected to telephone company lines for intercity circuits over great distances, and that can also be used for closed circuit within the walls of the institution.

The maximum plan encompasses teaching studios, a film center, and a master control to serve an entire institution. This is a TV teaching center, supplying all the desired facilities to every desired part of a building or the campus (Fig. 5). The center contains the various sources for originating TV lectures. In addition to the teaching studio and film room, there are other sources such as the mobile unit, special medical or other needed equipment, and portable cameras.

The center can gradually be built up over a period of time. High-fidelity equipment should be used. Individual units such as TV teaching studios, film rooms, special equipments, and master control are designed for easy interconnection. Thus it is possible to plan for an eventual TV center without the necessity for immediate outlay of money or immediate availability of space. At the same time, one can get started properly with the smallest essential unit of the center—the TV teaching studio.

TEACHING STUDIO EQUIPMENT

There are three general plans for equipping teaching studios, depending upon the size and application. Plan No. TS-1 is for the average studio and it employs two vidicon cameras. These can be directly or remotely operated. (Both pan and tilt operations of the camera can be operated from the control position.) A turret or

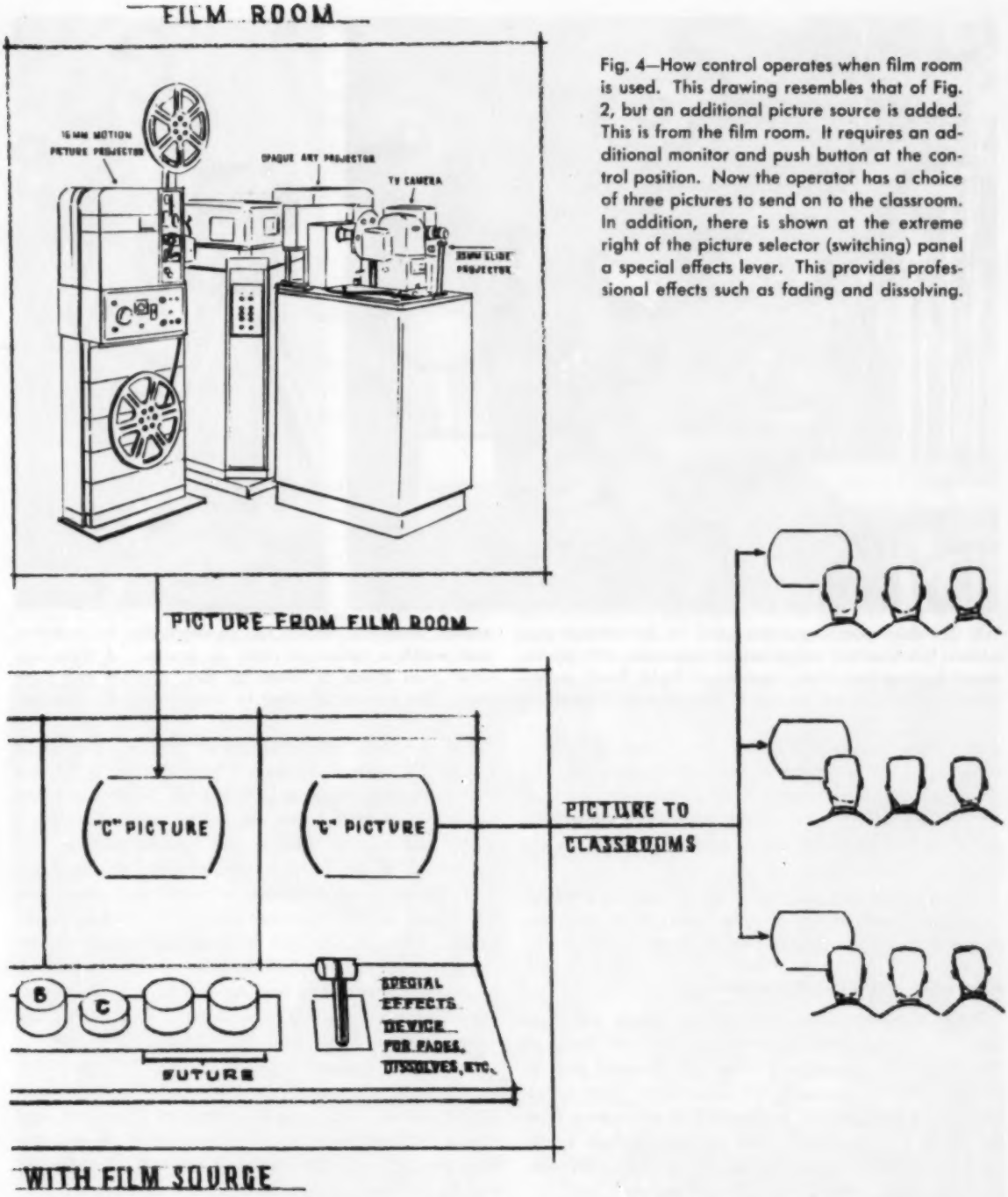


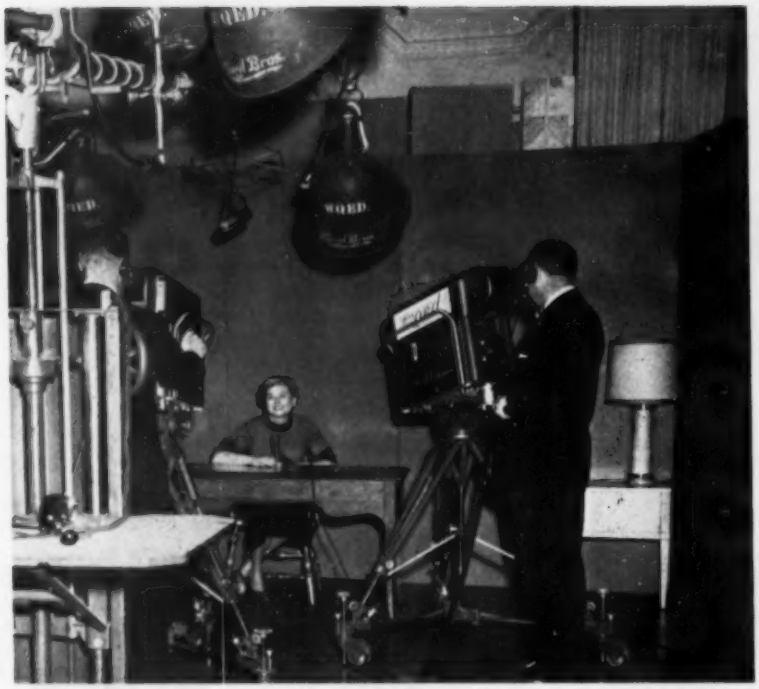
Fig. 4—How control operates when film room is used. This drawing resembles that of Fig. 2, but an additional picture source is added. This is from the film room. It requires an additional monitor and push button at the control position. Now the operator has a choice of three pictures to send on to the classroom. In addition, there is shown at the extreme right of the picture selector (switching) panel a special effects lever. This provides professional effects such as fading and dissolving.

single lens camera may be chosen and a remotely controlled zoom lens may be used. Probably the most useful vidicon cameras have built-in viewfinders.

Plan No. TS-2 employs two image orthicon cameras of the type regularly employed by broadcasters. They constitute the best equipments available today. Under this plan, the best and most versatile studios can handle large-scale demonstrations involving extensive production technics. The plan imposes minimum requirements for lighting.

Plan No. TS-3 is designed to serve medical and other applications in which color is required. It calls for two live color cameras. This is the same equipment used by the networks and stations to put on commercial color programs. It produces a full color picture on the television screen of color receivers; since this is compatible color, the picture also can be reproduced in monochrome on the regular black and white TV receiver.

For equipping the TV graphics center there are three suggested plans to choose from. Plan FS-1 is for a mono-



Left: Television teaching studio used for educational purposes. This uses two image orthicon cameras with professional lighting and audio equipment. Right: Small professional vidicon camera for use in educational TV teaching studios. Since this camera has no viewfinder, the operator must watch a viewer in order to monitor. A three-lens turret gives choice of lenses for long, medium and close shots. This camera is suited to remote control operation.

chrome film studio. Plan FS-2 is for a color film studio. Plan FS-3 is for a combined color and monochrome film studio. In each case the proper film cameras are included; also, 16mm TV motion picture projectors; 35mm slide projectors, and provisions for projection of opaque art and other large size graphics.

Film preview and editing facilities also are available as optional equipments in these plans, also kinephoto recording and tape recording equipments.

EQUIPMENT FOR REMOTE ORIGINATION

For TV presentations from places distant from the studio or campus, a studio-on-wheels has been designed. This is a truck chassis with a specially designed body to accommodate all necessary TV equipment. The mobile unit can be used near by or hundreds of miles away from the school to pick up a picture and send it back to the school. Plan MU-1 is for a monochrome mobile TV unit, and plan MU-2 is for a color TV mobile unit.

In addition, portable TV camera equipment also is available. This can be used for remote pickup—where it is not possible to bring the subject to the studio cameras. Plan PC-1 embraces the necessary equipment.

MEDICAL TV EQUIPMENT

For use in medical schools and teaching hospitals, special TV equipments have been designed. Usually color equipment is employed. Studios are equipped for clinical demonstrations, and operating and autopsy suites are equipped for teaching surgical procedures.

For equipping operating rooms and autopsy rooms a color TV medical camera has been designed. This has a special ceiling mount to keep it from the floor and thus to allow unhampered freedom for surgeons. A movable mirror and surgical lighting fixture arrangement enables the camera to be focused directly upon the operating field. By this means the camera is focused on a mirror that looks down on the operation through an opening in the surgical light. As the light is moved, the mirror follows the movement so the net result is that the camera remains focused on the operating site. An alternative boom mounting that allows the camera to be moved from one operating room to another also is available.

Plan MD-1 includes the medical color TV camera for equipping an operating or autopsy room. This is a three-vidicon camera with remote control of focus and lens change. All necessary control equipment and power supplies are included. The camera is remotely controlled so that no personnel is required in the operating room.

Plan MD-2 is for a live color camera chain for equipping a medical teaching studio for clinical demonstrations. This is the regular studio color camera used by broadcasters for live color programming.

Plan MD-3 is for a three-vidicon color camera for TV microscopy in color. This will produce enlargements of specimens of the order of 25,000 diameters upon the screen of a 21 inch color TV receiver. Regular microscopy dark field and phase microscopy can be incorporated.

Plan MD-4 is for a monochrome vidicon camera chain to be used for remote presentation of x-ray pictures. This

type of TV display may be used to enhance the contrast and hence the intelligibility of the x-ray picture.

All these various plans are submitted in summary rather than in detail in order to present a rapid review of the equipment possibilities. Each plan represents a definite equipment schedule that is completely detailed. These schedules can be employed by consultants and engineers to lay out a TV teaching system. Audio-visual directors, educators and administrators can have free access to all this material.

PICTURE DISTRIBUTION FACILITIES

Picture distribution and viewing facilities are another important part of the equipment planning. Classrooms and buildings can be connected to the picture source by suitable cable. For student viewing, 21 inch TV sets can be used in the regular classrooms, and large-screen TV projectors that produce 6 by 8 foot pictures can be used in large classrooms or auditoriums.

If more than one picture source is available, the distribution system can be arranged so that there is a choice of program in each viewing area or throughout the system. Switching apparatus forms a significant segment of the over-all TV system. This is the logical place to which additional preview monitors, film controls, and remote origination controls can be added as a system expands. It is here that the educational director adds the expert touch that characterizes professional TV teaching.

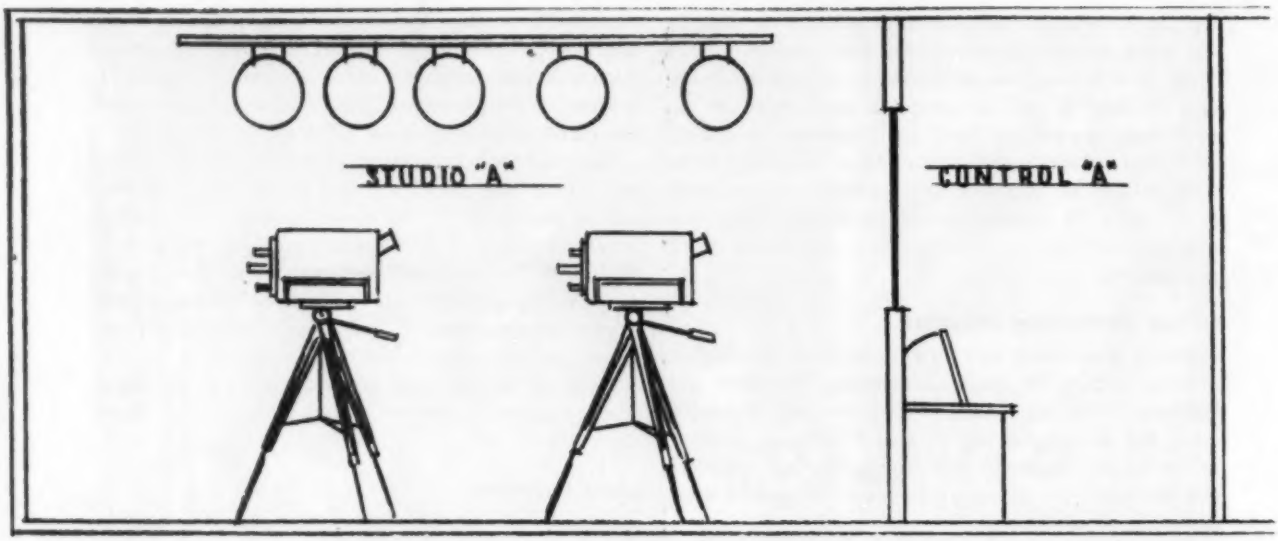
The video switcher consists of a row of push buttons and a fader unit (Fig. 4). Any of the picture sources may be selected by the use of the push button. A switch to another picture is made instantaneously by the push of the button. The fader unit permits the director to provide the following special effects: (1) fade or dissolve any two pictures simultaneously; (2) fade-in or fade-out any one picture, and (3) superimpose two pictures.

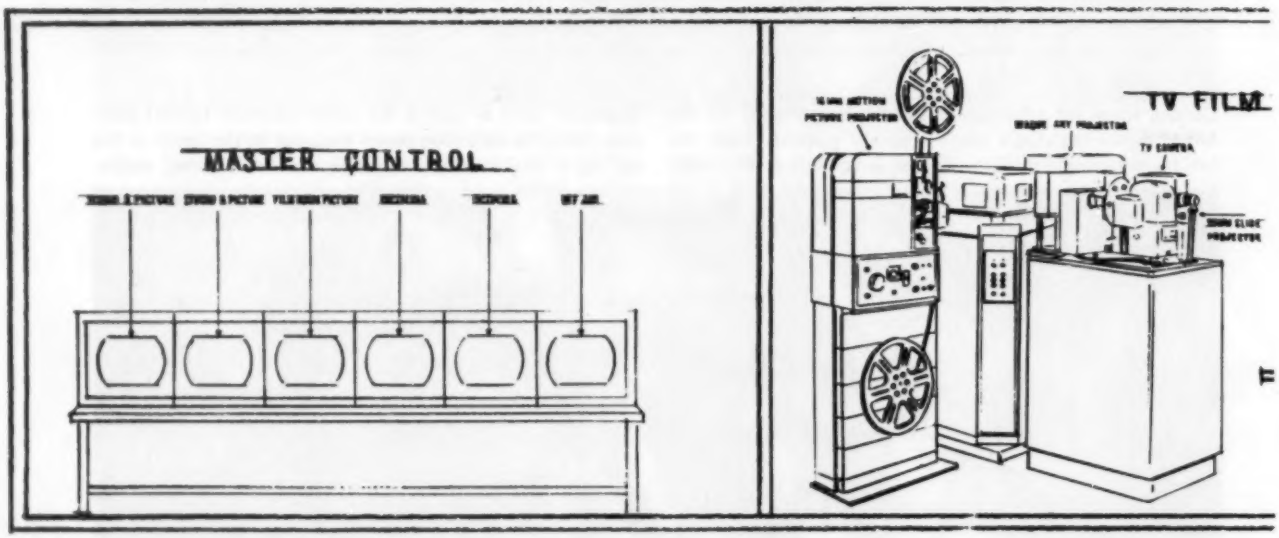
These special effects add an expert touch to the educational presentation, prevent program lapses, and ensure continuity.

AUDIO EQUIPMENT

Although all necessary audio equipment is included in details of the suggested plans, for purposes of simplicity we have been considering only the picture portions of the TV teaching medium in this article. However, microphones, turntables, recording apparatus, loud-speakers and all other

Control room for educational TV teaching studio. To the left is shown the audio (sound) control position. Note the two transcription turntables, one on either side of the audio operator. To the right is the video (picture) control position. Note the switching panel mounted in the table at the far right. The windows overlook the TV teaching studio.





equipments for generation and reproduction of sound play an important part in any complete system. These also must be carefully planned and integrated into the system. Provisions can be made for talk-back from classrooms so that the discussion method may be employed.

In the over-all organization of the television teaching system, a university would be divided into groups, each containing a number of departments that are related with respect to subject matter and also, in most cases, geographic proximity. Each of these groups would be built to operate independently of the other. Each would have complete live and film origination facilities together with its own distribution facilities. Each group, however, would be connected to a TV center to permit interchange of program material from one group to another and also to provide certain specialized facilities, including kinescope recording, video and audio tape recording, 35mm film projectors, a mobile unit, a maintenance shop, and a film and tape library. If desired, a broadcast transmitter and microwave connection to branch campuses could be added.

Few, if any, universities will wish to install a system of this magnitude all at once. On the other hand, in planning the initial portions of an installation, an ultimate plan of this sort should be made so that nothing is done in the early stages that would preclude, or make difficult, future growth.

All the foregoing plans can be achieved through the use of high-fidelity broadcast type of television equipment. The components can be assembled like building blocks in a child's game. One can start with a simple system, then expand it as the need develops. In time such a system can reach proportions to serve an entire institution.

Let us turn our attention to some systems in actual use that exemplify the attributes suggested.

Many educators and educational institutions already have engaged in plans for employing TV as a teaching medium

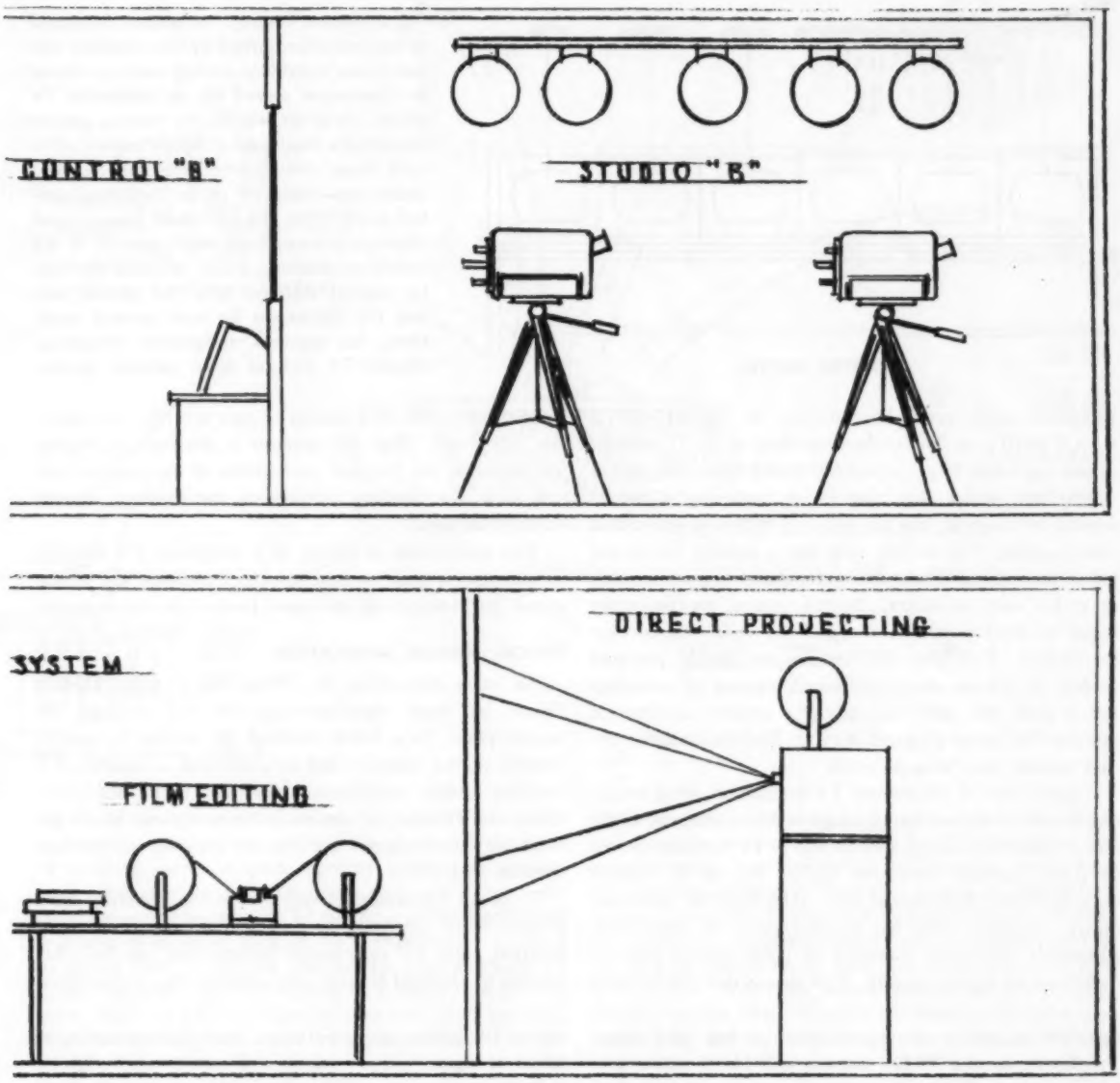


Fig. 5—Television teaching center. This shows a complete TV system to serve the requirements of an entire building or several departments of a university. Included in the TV center are teaching studios with control rooms, a TV film (graphics) system and a master control. Although only two teaching studios are shown, more can be included if desired. (Some systems employ three or four in the center.) Provisions are included in the film area for direct projecting and editing of motion picture films. Provisions are made at master control for TV pictures from outside sources also.

rather than as a mere aid or tool. According to the Joint Council on Educational Television there were 68 closed-circuit installations in educational institutions in 29 states as of February 1956. Fifty per cent of these educational users of TV have chosen the broadcast type of equipment for their installations. It is the users of these systems whose installations we are considering at this point.

In a prospectus issued for last fall's term, Washington University announced "A New Method of Presenting Mathematics 115, College Algebra and Trigonometry." In presenting the course via television the department of mathematics declared that "instruction in mathematics can be improved two ways: (1) through increased opportunity for individual instruction and assistance; (2) through making available to every student the department's most experienced and able teachers."

To accomplish these results Washington University changed its pattern of instruction not only to provide for lectures via TV but also scheduled "help sections." The TV lectures are being given by senior members of the department—telecast twice one afternoon and evening, and repeated over closed circuit three times the following day. Students thus have several opportunities to hear the lecture. The "help sections" are staffed with assistants and are

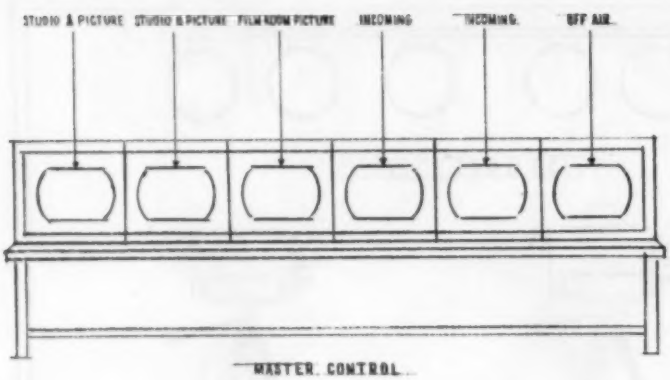


Fig. 6—Master control. Its function is related to the institution served by the complete system as an individual control room is related to classrooms served by an individual TV studio. In other words, the various picture sources are displayed at master control while only those coming from any one teaching studio are displayed at an individual control room. Also, the individual control room displays pictures from each camera in the individual teaching studio, whereas the master control displays only the picture sent into the classrooms by each control room. Here, the monitors designated "incoming" display TV pictures from outside sources.

scheduled nearly every hour during the day as well as from 8 to 10 p.m. The student can drop in for 10 minutes or stay for hours, to get as much personal help as is needed.

Emphasis under this plan is on mastering a certain amount of material, not on spending a certain amount of time in class. The student thus has a definite day-by-day job to do and the responsibility for doing it rests squarely upon his own shoulders. By this means the university hopes to develop self-reliance and the ability to discover for oneself. This plan also enables the poorly prepared student to get an almost unlimited amount of assistance but it does not make any group a captive audience or penalize the better prepared student. Help is available and each student takes what he needs.

Another type of educational TV installation, using broadcast standards but not using image orthicon cameras, is the one at Lafayette College, Easton, Pa. A TV teaching system has been installed there that typifies the use of vidicon cameras of the professional type. Although the particular camera employed there has no viewfinder, the installation adequately fulfills the standards of good practice since it makes use of remote control. This means that the cameras are remotely controlled insofar as "pan and tilt" movements are concerned. Thus the operator at the control position can regulate the physical movements of the cameras and can view the resulting pictures on the monitors directly in front of him.

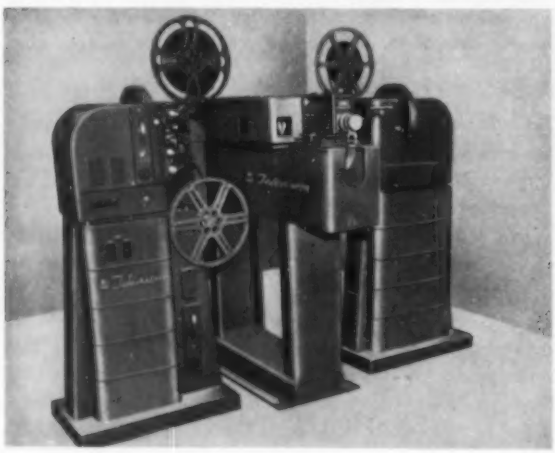
This installation is typical of a simplified TV teaching system that is quite satisfactory for a medium size educational institution with moderate production requirements.

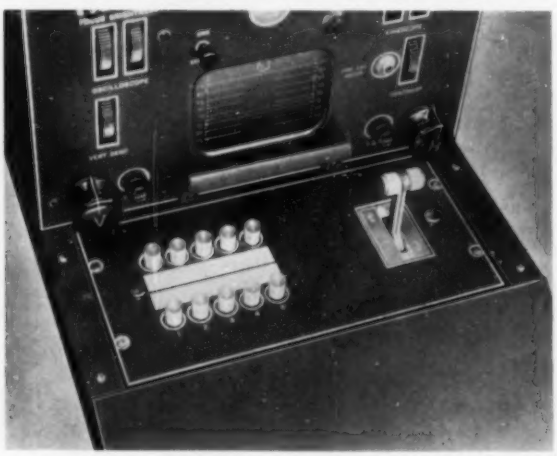
TYPICAL MEDICAL APPLICATION

For mass instruction the Walter Reed Army Medical Center has been experimenting with TV teaching for several years. As a direct result of the success in training doctors, nurses, orderlies and lay personnel, a complete TV teaching center, employing color, has been established. There are TV teaching studios in three separate buildings; these are interconnected but can also serve as independent systems.

There are TV camera installations in the operating suite, autopsy room, veterinary surgery, and the dental suite. In addition, color TV microscopy facilities are installed. According to Dr. Paul Schafer, executive director of television

Left: TV equipment for reproduction of film and slides. This shows use of a TV film camera with 16mm motion picture projectors. Slide projectors and opaque art projectors can be included. This will permit the educator to assemble a complete graphics center. Right: TV picture switcher. Closeup view of a control panel for selecting and switching of TV pictures in control room. Push buttons are numbered to agree with TV inputs and monitors. At right is a fader mechanism, which permits the operator to fade or dissolve pictures or to superimpose one upon the other. It is by this means that smooth and expert transitions can be accomplished to enhance the learning process.





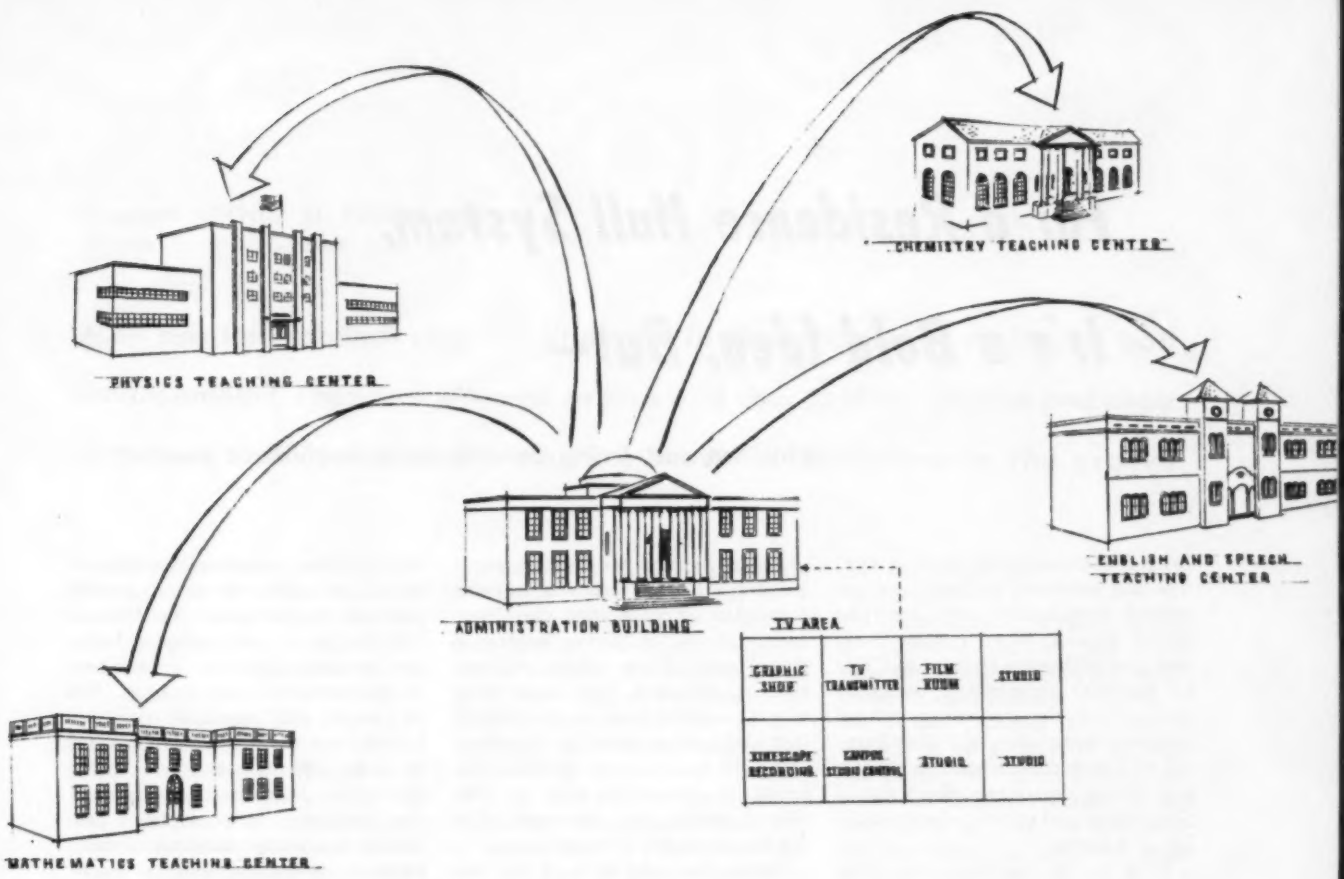


Fig. 7—Universitywide television teaching system. In such a system the ultimate plan would probably be to include a TV teaching center in each separate building or department. However, in the first phase, the entire university could be served by a single TV teaching center established in a central location, such as the administration building as shown here. From this site the TV pictures could be distributed to the various buildings as shown by the arrows. More than one picture could be sent into each building. The distribution system could be arranged so there is a choice of picture (program) at the viewing locations. There could also be arrangements made for TV originations and demonstrations from the various buildings as well as from the teaching center. For discussion groups as distinct from lecture instruction, there could be incorporated talk-back circuits so that student questions and discussion could be handled by the instructor from the studio while the class is in session. With these various possibilities it is not difficult to visualize how educators can employ television as a medium for increasing the content and level of learning.

at Walter Reed, the instruction provided by this system is of a higher caliber and costs less than by the conventional method.

The University of Michigan is in the process of installing a color TV system in its medical school. This will be used for demonstrating and teaching surgical and clinical procedures. For medical training, color TV is just about the ideal medium since it provides a large view of the subject, an unobstructed view, and, finally, a view in natural colors.

Some of the early experimenters have found that the small, industrial type of vidicon TV camera can be used effectively as a teaching aid, much the same as other visual aids. It is especially useful for viewing small objects and giving magnified views of microscopic slides. Prolonged use, however, of a single fixed camera merely magnifies boredom. The presentations suffer from lack of continuity, being interspersed with pauses, lapses and blank screens.

The full potentialities of TV for teaching cannot be reached by this means. Hence, it is important to distinguish between the use of television as a visual aid and as a teaching medium.

Experience with television systems employing completely equipped teaching studios and thoroughly organized for proper control has demonstrated that this is the method for the educator to use in order to obtain the most desirable results. The learning process is both eased and speeded, quality of teaching is increased, and more students can be accommodated.

Equipment for these systems is available in modular units for the building-block type of construction. This means that expansion does not make the original equipment obsolete. One can start small and expand economically as conditions warrant.

Such a system as we advocate here does not place limitations upon the instructor. Instead, it gives him many more technics, devices and demonstrations to enforce his presentation; it places at his disposal all the unique powers of the medium.

For a Residence Hall System, It's a Bold Idea, But—

Why not suit living conditions to individual needs?

LIVING ACCOMMODATIONS FOR COLlege and university students have improved considerably over the past several decades. When Edward Harkness gave millions to Harvard and Yale for extensive programs of dormitory development, the way was paved for American institutions of higher learning to follow these schools in providing living quarters that would complement and enhance the academic life of students.

Prior to the Harkness era, little thought had been given by American educators to the impact that physical living conditions had on the personality and academic development of the student. Residence halls were designed, in general, to provide shelter for students, but little imaginative planning was devoted to the relationship of dormitory life to academic life.

The impact of the Harvard house plan and the Yale college system was far-reaching. For the past 30-odd years, colleges and universities have concentrated more and more effort on designing residence halls that provide an atmosphere conducive to academic pursuits. Many notable strides have been made, and today college students, though generally living in crowded residence halls because it has been impossible to keep pace with the rapidly growing student population, are better housed than ever before. Not only are physical arrangements better but, through the expansion of faculty resident advisory programs, more direct liaison between faculty and students is possible. Yet all is not perfect. Many problems face the colleges in this vital area.

As education receives more and more support from government and from private sources, the overcrowding that exists in virtually every institution of higher learning will be ameliorated. Residence hall construction is going forward at an astonishing rate. However, with the staggering increase in size of most of our colleges and universities, educators once again must take a searching look at the policies that have been accepted for dormitory living. In so doing the problems inherent in colossalism must be considered along with increasing costs and the increasing services desired.

Before discussing some of the various dormitory staff and personnel systems and their relations to present-day educational needs, it would be wise, perhaps, to consider the assembly-line standardization apparent in many dormitory plants today. As paradoxical as it may seem to sincere proponents of the liberal arts, many colleges and universities have settled, after thorough and exhaustive studies, on a dormitory pattern that appears to suit best the needs of the particular institution.

Take, for instance, the hypothetical case of the university that decides to build Gothic dormitories (it is in keeping with the architecture of the rest of the campus), with lounge facilities in each residence hall, and an apartment for a married faculty resident. Each unit, it is decided, will house 100 men or women. A few buildings of this type were built in the Thirties; they were costly but proved to be adequate and popular with students and alumni. Since the first units were constructed, more of the same type have been added, and it is expected that more will be built as the need arises and as money for them becomes available.

So it goes, and the university has a dormitory system that is considered adequate. The complete sameness of each residence hall simplifies administration, and university officials proudly proclaim the virtues of their system. Yet the picture is incomplete unless the question is raised: "Is sameness in dormitories the best system?" We all know that standardization has brought our country a high standard of living by making possible mass production of material goods. However, applying this principle of production to academic institutions whose products are human beings is inconsistent.

When designing curriculums, educators consistently and emphatically reject the theory that all students should take the same course of study. Why, then, should the same educators support a residence hall system that denies free expression and choice?

Varied individual room plans exist in virtually every American college dormitory. Individual expression often is possible through choice of room, price of room, number of roommates and decoration. Why not carry this a step further and provide for the man who is capable and mature enough to live in a dormitory where there is no faculty supervisor or counselor? Or, why not provide one residence hall with student proctors and no faculty? Why not have a few dormitories with faculty residents and several with non-resident advisers? Why not have a plan that allows individual choice, with an occasional assist from the dean when it is necessary?

Perhaps the most common staff personnel program for residence halls is the faculty resident system. Basically, this plan incorporates a faculty apartment (invariably too small) in the dormitory, usually located on the first floor of the building. Here the faculty man takes up residence, with ill-de-

Suggests ARTHUR H. KIENDL Jr.:
Associate Dean of the College at Dartmouth

Why not let freedom ring for students in their choice of residence hall environment! They are allowed to pick and choose their courses and their activities, but in dormitory life they must fit themselves in the groove

fined duties. He is supposed to act as a father figure, a wise counselor, a mild but effective disciplinarian, and his wife (if he has one) is expected to serve tea and coffee graciously to students on cold, wintry days in front of the living room fire. The fireplace is usually provided, but not the wood.

With this romantic dream of other days, faculty is recruited for these positions. At first blush this seems like a simple procedure, but every administrator who has worked on the problem knows that the established, more mature faculty man will not take this position for many reasons. He is not interested in becoming a disciplinarian, he is overburdened with teaching and committee work, he owns his own home, his children are the wrong age, the apartment is too small. He'd like to help you out, but he thinks you ought to try to get a younger man.

The position is usually filled by the young instructor or the graduate student who needs the money. He is often insecure himself and is struggling to gain status in his field. His wife either is going to have a baby or has one. Hence the program, which looks excellent on the surface, is likely to be a desperate type of operation. In deference to the hundreds of young couples who serve as faculty residents in dormitories, it should be stated that, despite the mentioned handicaps and drawbacks, they serve well and faithfully, but albeit with a tired eye on the day when they, too, can say "I'd like to help out, but—."

Another system administrators often point to with pride is the one utilizing mature senior undergraduates as proctors or dormitory counselors. This type of program is often found in the smaller, private colleges where economy is essential.

Good seniors carefully picked do provide a settling influence in a residence hall. The persons picked for these positions are, by and large, excellent students, well adjusted, and good "hero" figures. They, too, serve faithfully and well. But what of their last year as undergraduates? They are placed in the untenable position of being on the side of the administration and yet they are supposed to be "one of the boys"! Do we not have an obligation to these students *as students?* The easy camaraderie of dormitory life is lost to them in their senior year when they are forced to assume the responsibilities of adult counselors. Some administrators may say that it is a "wonderful experience" for these seniors. I wonder how many who make this point have been senior proctors in a college residence hall. I have seen such service leave irreparable scars on the personalities of good men.

The housemother system, another common method of dormitory supervision, is the "grandmother" approach. Usually a woman past middle age whose children are grown and whose husband has died is hired to act as housemother. Such a person is extremely effective and is generally a loyal and conscientious worker. She has a rich background of experience and enjoys the contact with young people that otherwise would not be possible for her.

Unfortunately, such women are not too plentiful and they are elderly. The college or university that hires them must take into account the fact that they have reached retirement age, but are taking on a position that is exhausting to even the most vigorous adult. Illness may result, and caring for these persons when they become aged may well be the penalty for instituting this system.

All dormitory supervisory systems are expensive, and for that reason many colleges and universities are reluctant to enter elaborate programs of this nature. Consequently turning a deaf ear to the problem of residence hall living, they rely on student committees to keep riots down in the building. It has been my experience that a residence hall composed of 80 or more young men of the present college generation, who are without supervision, quickly becomes bedlam, where mere survival is the order of the day.

Finally, the perennial problem of freshman dormitories enters the picture. Much time and energy have been spent by academicians and administrators debating the old question of whether to have freshmen dormitories. Some colleges have them; some mix freshmen in with upperclassmen. Few colleges leave the choice of whether to live in a freshmen dormitory or a mixed dormitory up to the freshman himself. Here, then, is another area in which the student could be given freedom to pick the environment that best suits his needs.

The bold administration may well ask itself whether it can afford a varied curriculum and an unvarying residence hall system. Perhaps disparity in dormitories is the solution to the problem of suiting living conditions to the needs of the individuals. Of the different systems described here, it might be advantageous to have on the campus a sampling of each. Imagine a college student being allowed to pick his courses, his extracurricular activities, *and* his living environment. Sound silly? Well, so did the multicourse curriculum 150 years ago.

Work Scholarship Plan

transforms restricted scholarship income into a boon

JOHN C. BRAMER Jr.
Business Manager, Western Theological Seminary, Pittsburgh

WESTERN THEOLOGICAL SEMINARY, as most other institutions of higher learning, over the years has been the recipient of many gifts earmarked by the donors for scholarship aid.

As in nearly all privately controlled schools, Western Theological students pay in fees only about one-third of the total per student cost, so for everyone enrolled in the seminary the administration must seek nearly 67 per cent of the cost from sources other than student fees. For Western, these sources include endowment income, denominational support, individual contributions, and income from the newly organized Pennsylvania United Theological Seminary Foundation, Inc.

THE PROBLEM

Scholarship aid probably serves to attract some students who would not otherwise come to Western. However, for each student thus recruited, income from other sources must be increased proportionately. Conceivably then, if enough such scholarships were "granted" to the seminary, it would be forced to close its doors.

This problem has been recognized by most schools so that many now are accepting gifts restricted for scholarship aid only when provision is made for the remainder of the cost per student to be paid directly to the donee institution. This solution prevents an accumulation of costly scholarships in the future, but it does not provide for profitable use of scholarships now on the books.

Faced with the problem of rising costs, the administration set about to determine whether Western might receive *quid pro quo* on existing grants.

After much study and deliberation, a work scholarship program was instituted that benefits the student receiving scholarship aid as well as the seminary.

THE PLAN

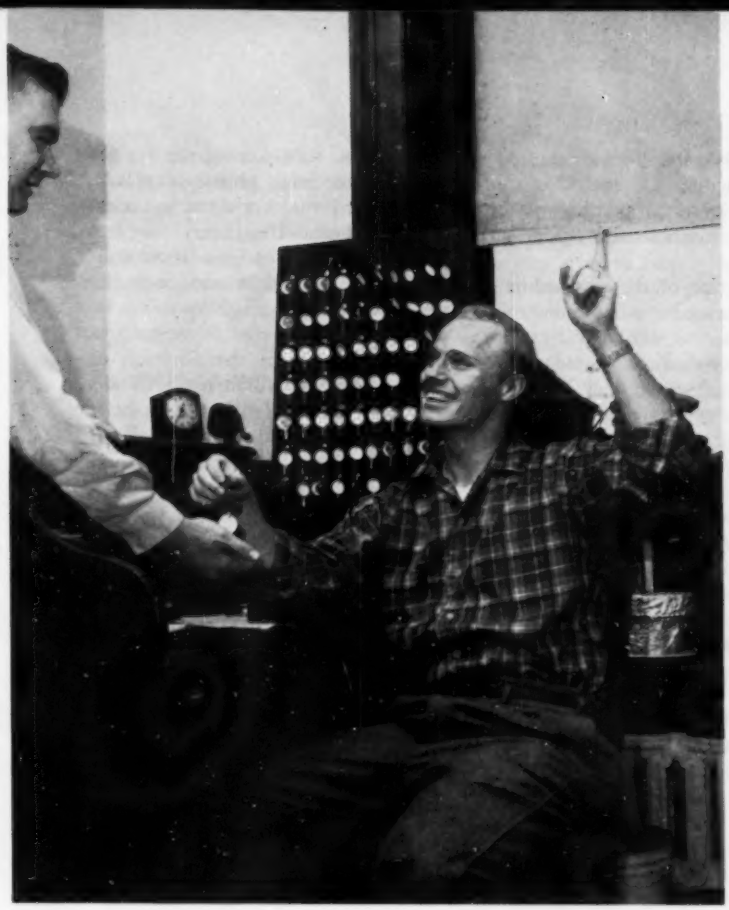
A survey was made within the seminary to determine what duties were not being performed or were being taken care of by regular employes in addition to their normal work load. As a result, a list of jobs was compiled; it included such posts as snack bar manager, dormitory clerk, library assistant, maintenance assistant, and chapel assistant. Tentative job descriptions were then drawn up on these and other positions and, from the description of duties, the jobs were "priced," giving weight to hours to be worked, responsibility and pleasantness of the job.

The next step was to inform the student body of the work scholarship program. This was done by circulating a complete list of job descriptions (including the remuneration per semester) and an application form to be completed by students interested in a work scholarship. The application form requests each student to list in order of preference three jobs in which he is interested. In addition, the form requires that the applicant supply in detail his total anticipated income for the semester, the sources of income, and his probable expenses for the period.

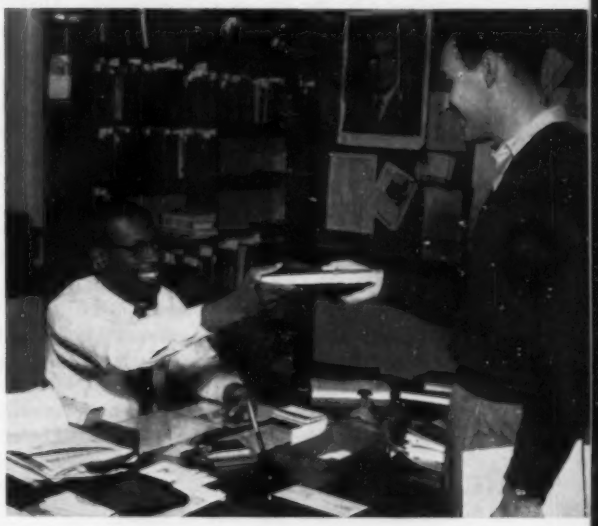
The completed applications are then analyzed and tentative awards are listed. In order to comply with the terms of the original grants, the list of awards was submitted to the faculty for final approval.

(*Text Continued on Page* 40)

Work scholarship program at Western Theological Seminary permits waiters to pay board bill from scholarship income. They pay full price for meals.

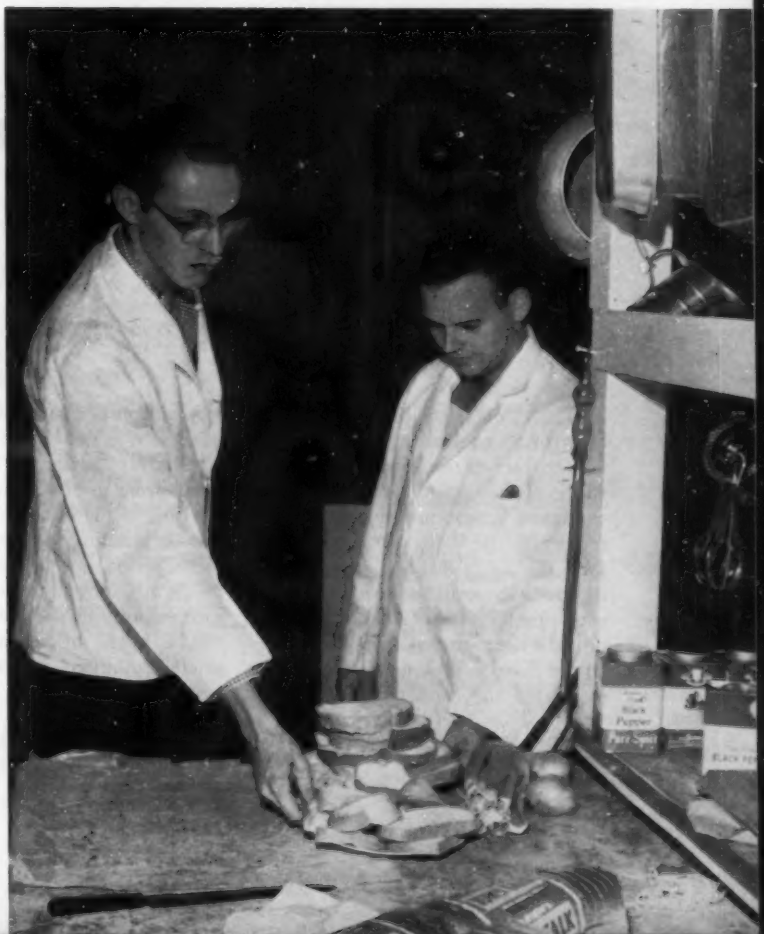


Dormitory clerk directs a new student to his room. This is one of the jobs filled by students receiving scholarship aid.



Library assistant, recipient of a work scholarship, checks out a book to a fellow student.

Twenty choir members, organist and choir manager at Western are others who benefit from work scholarship program.



The head waiter and his assistants earn full board costs under the new program. Formerly, they were reimbursed for their labor by receiving their meals free.

(*Continued From Page* 38)

After the awards are publicized, the successful applicants report for work to the supervisor indicated in the job description. At the end of each month, a prorated portion of the semester's remuneration is credited to the student accounts and credit memorandums are issued to the students involved. At the end of each semester, the total of the credit memorandums is transferred from the restricted scholarship income account to the appropriate current income accounts, namely, student tuition, dining hall, and dormitory income.

Since a large percentage of Western's students pay their fees in five equal installments, there is usually a debit balance on their accounts to be reduced by the scholarship credits. In the event there is no balance, the credits earned in the work scholarship program are applied to a future semester's account. The proceeds of a scholarship are paid in cash only when a student is graduating or otherwise will not owe the seminary during the remainder of his training.

ADVANTAGES OF PLAN

The program has several distinct advantages over the previous method of doling out scholarship money each semester.

1. A portion of the scholarship income is funneled into current income. For example, the dining hall employs four waiters and one head waiter. Under the old system, they were reimbursed for their labor by receiving all meals free of charge. The cost of these meals was, of course, absorbed by the dining hall. Under the work scholarship program, each waiter receives a work scholarship and the total of the board bill is paid to him from scholarship income and he is charged with the full cost of his meals.

2. The work load of seminary employes is reduced. Formerly, the janitorial staff was charged with the duty of seeing that such things as parking lot regulations were being enforced. The matron and her staff had to handle guest room assignments and the like. Under the work scholarship program, a student maintenance assistant and a student dormitory clerk now handle these duties, thus freeing the regular employes for more pressing duties.

3. Other projects now can be undertaken. Whereas the library formerly closed at 5 p.m., and the choir consisted of about eight members, the work scholarship program makes it possible for the library to be open in the evenings under the direction of a student library assistant and the choir now consists of 20 members plus a choir manager and organist, all of whom receive work scholarships.

CONCLUSIONS

The work scholarship program complies with the terms of the original grants which specify that the income from the various gifts "be used to assist in securing a theological education for such young men as shall be deemed worthy by the seminary president and faculty." Moreover, the seminary, as well as the recipients of the scholarships, is receiving tangible benefit from the scholarship grants. In short, the work scholarship program has transformed this restricted scholarship income from a burden to a boon.

Taxpayer Objects to Debts for Dormitories

T. E. BLACKWELL
Educational Management Consultant, Washington University, St. Louis

A RECENT DECISION OF THE SUPREME court of South Dakota[1] has written a new chapter in the long history of the efforts of the taxpayers to enforce constitutional limitations on the power of the legislature to borrow money. In 1955 the South Dakota legislature authorized[2] the state board of regents of education, with the consent and approval of the governor and the secretary of finance, to issue revenue bonds to finance the construction of necessary student housing at any educational institution under its control. The principal and interest of such revenue bonds were to be secured by a pledge, not only of the income to be produced by the buildings so constructed, but, for a period not to exceed 10 years, of the net income of student housing then existing at such institutions.

The board of regents, by appropriate resolutions, authorized the construction of a women's residence hall, a men's residence hall, and an apartment building for married students on the campus of the South Dakota State College of Agriculture and Mechanical Arts at an estimated cost of $1,900,000.

Henry A. Boe, a taxpayer, invoked the original jurisdiction of the supreme court of his state to arrest the proposed action of the board of regents on the ground that the issuance of the revenue bonds to finance the project would create a debt of the state in excess of the limitation established in its constitution.[3]

Judge Smith, delivering the unanimous opinion of the court, points out

[1]Boe *v.* Foss, 77 N.W. 2d 1 (1956).
[2]Chapter 49, Laws of 1955 of South Dakota.
[3]Sections 1 and 2, Art. XIII.

that his court, in 1938,[4] had already upheld the special fund doctrine in connection with a case involving the legality of revenue bonds issued by the State College Development Association to finance the construction of two residence halls to be located on the campus of the same college.

BUILDINGS OWNED BY STATE

The buildings were to be erected by the development association, a separate corporation, but they would be owned by the state and leased to the college. Only the net revenue of the dormitories to be erected was pledged for the payment of the revenue bonds. In effect, the court had said in this earlier case that, if the purchasers of the proposed revenue bonds could look only to a special fund, to be derived solely from new revenue produced by new construction, the bonds were not a debt of the state, within the meaning of the constitutional debt limitation.

In the current case, however, revenue of already existing buildings would be used to pay off the bonds, in addition to the revenue to be derived from the new buildings. This, concludes Judge Smith, is going too far. He asserts:

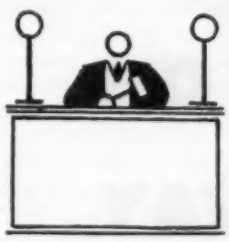
"Because of that pledge of additional property and resources of the state, we are solemnly persuaded that such a debt has been incurred. . . . The crucial inquiry is, whether those who framed and adopted our constitution used the term 'debt' in some special or limited sense, which fails to comprehend such a debt.

"Looking to its context, subject matter and purposes, and to its relationship to the 'pay-as-you-go' policy so obviously revealed by the constitution as a whole, we discern no rational basis for a conclusion that this debt limiting provision thereof relates only to debts for the payment of which taxes must be levied.

"If, as some sincerely believe, these organic limitations are unrealistic and are hampering progress, the appeal must be to the sovereign people. To amend the constitution is not a function of the court.

"Because of the conclusions we have expressed we assume that any such revision of the proceedings of the board will involve no more than a pledge of the income, after deducting maintenance cost, of the facilities to be acquired with the proceeds of the revenue bonds it proposes to issue."

In support of his opinion, Judge Smith referred to a leading case in the adjoining state of North Dakota.[5] In 1928, a taxpayer of that state had challenged the constitutionality of an act of the legislature creating the University Dormitory Association of Grand Forks for the purpose of erecting residence halls on the campus of the state university and leasing them to the state board of administration.



Chief Justice Nuessle stated the opinion of his court as follows:

"To our minds the fact that the dormitory income goes into so-called 'institutional funds' and not into the state treasury can make no difference. Whether paid into the treasury or not, this income is, nevertheless, the property of the state. . . . We are forced to the conclusion that the contract . . . will result in a debt against the state within the meaning of the term 'debt' as used in the constitution."

OKLAHOMA CASE CITED

Another more recent case[6] cited by Judge Smith involved the validity of a proposed issue of revenue bonds, in the amount of $1,450,000, by the Oklahoma Educational Television Authority. In the opinion of the Oklahoma supreme court:

"When a dollar comes into the possession and ownership of the state, it is of no more or less value to the state and to the citizens thereof because it comes from the cigaret tax or the gasoline tax . . . or from the rental of lands owned by the state. We consider it beyond question that the state and the people of the state have the power, by constitutional provision, to protect all funds belonging to the state from future debt."

These court decisions reflect the unending struggle between the taxpayer and free-spending legislators. In order to restrain the generosity of their legislatures, the taxpayers in many states have insisted upon, and obtained, specific constitutional limitations on the power of the lawmakers to incur debt for public improvements. According to a study[7] published in 1954, only seven states, *i.e.* Connecticut, New Hampshire, Delaware, Rhode Island, New Jersey, Tennessee and Vermont, have no constitutional debt limit.

Despite plain language to the contrary, a verbal detour around these constitutional road blocks was soon constructed. The special fund doctrine, upon which the validity of most revenue bonds depends, is said to have had its origin in the state of Washington in 1895. The city of Spokane had reached its constitutional debt limit but found itself in need of a new waterworks. It issued bonds payable solely from the revenue to be derived from the system. The state supreme court held that the issuance of these revenue bonds did not create a debt, as defined by the state constitution.

DEVELOPS DURING DEPRESSION

The revenue bond, as a new financial idea, spread slowly from west to east. Its major period of development came during the depression years when the Reconstruction Finance Corporation was authorized by Congress to make loans to finance self-liquidating municipal projects. More recently, congested highways have tempted the legislators of many states to issue revenue bonds to finance the construction of toll roads. After World War II, the flood of veterans seeking higher education created a similar dilemma for the tax supported colleges and universities. With ever increasing enrollments, the problem is still current.[8]

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[4]State College Development Association *v.* Nessen, 281 N.W. 907 (1938).

[5]Wilder *v.* Murphy, 218 N.W. 156 (1928).

[6]Application of Oklahoma Educational Television Authority, 272 P. 2d 1027 (1954).

[7]Cermak, Lawrence E.: The Law of Revenue Bonds, National Institute of Municipal Law Officers, Washington, D.C. 1954.

[8]See also:

Knappen, Lawrence S.: Revenue Bonds and the Investor, Prentice-Hall, Inc., N.Y. 1939.

Stewart, R. B., and Lyon, Ray: Debt Financing of Plant Additions for State Colleges and Universities, Purdue Research Foundation, West Lafayette, Ind., 1948.

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SOLVE THESE SIX PROBLEMS AND YOU'RE ON YOUR WAY

to a future in the management of higher education

WENDELL E. HULCHER
Financial and Merchandising Planning
Edsel Division of Ford Motor Company, Detroit

THE FUTURE OF HIGHER EDUCATIONAL management will be a future of problem solving. The president and board of each college and university face unique, specific problems. Many of the problems are associated with expanding enrollments. Many are associated with improved quality and academic excellence.

The challenge is clear. Educational management faces the acid test. Does the college president have the concepts, plans and tools necessary to problem solving? Has he the time available adequately to prepare for the future?

OBJECTIVES

Is there common agreement on the objectives of the college? If not, this is Problem No. 1.

President Conrad Bergendoff, Augustana College, Rock Island, Ill., included the following in his 1955-56 report: "It is a good time for a college to study itself and ask how large it wants to become. This involves deeper questions. What purpose is the college seeking? Can it afford to grow —does it have the buildings, the funds, the teachers? Can it afford not to grow—will it be penalized by lack of public support if it does not try to care for more students?"

Another midwestern college president recently sent this message to alumni: "In the next 10 years we ought to increase the endowment substantially, and we ought to build a dining hall and student union. I am persuaded, however, that we should give our major attention to improving the quality of instruction. Let this be a decade of quality."

This is an open invitation to agree on quality as the governing priority in the face of increasing enrollment pressures.

Obviously, until these deeper questions are resolved no meaningful plans can be laid. Have they been resolved? Is executive direction clear and precise? Is there agreement with the governing board? Are the staff and alumni sympathetic?

Solve Problem No. 1 and the college is on its way.

PLANNING

In his crowded schedule of daily affairs has the president the time to plan? After setting objectives he needs to plan step by step how he can attain them. Has he done it?

If not, this is Problem No. 2.

The administration wants to increase operating effectiveness, to improve alumni relations, to increase salaries, to attract affluent supporters, and to improve the buildings. The administrator must define what is to be done, who is to do it, when, where and how. Assignments of responsibility for particulars must be made and the plans communicated concisely and clearly.

Time. Time. Time. If the executive only had time! But the plans *must* be laid. Otherwise he will reap the wind.

Not long ago several schools were competing with one another for funds from a single source. The schools were part of a common system. How should the funds be allocated among them? An amicable solution was reached when five-year plans and needs were clearly outlined and studied by the central board.

A well defined plan becomes the basis for: (1) internal effectiveness and harmony—staff and faculty know what is expected of them and work as a team; (2) agreement with the governing body, alumni and friends of the school on the proper utilization of resources and on actions to be undertaken; (3) effective public relations and publicity, especially in support of stated needs for funds.

ORGANIZATION

Organization plans of various colleges and universities show differences that often indicate strength. For, in small schools particularly, a good organization is adapted to the particular key people available. However, some

differences exist because sound principles are overlooked.

Which is the case here? Is the organization sound? This, then, is Problem No. 3.

Sound organization includes these traits: (1) effective and efficient discharge of all functions, and (2) basis for assignment of responsibility and delegation of authority.

A few questions helpful in appraising the soundness of the organization are as follows:

1. Is the basic organizational setup of the institution outmoded? Should there be a realignment of functions?

2. Is there lack of proper coordination among major activities, *i.e.* do the departments function too independently? If so, the obvious results are conflicts, lost time, and increased cost. Are there necessary activities that have not been assigned to someone?

3. Are there overlapping duties and a hazy knowledge of division of responsibilities? Frustrations, hard feelings, conflicts and low operating efficiency can readily result. Do people have two bosses or perhaps none at all?

4. Are decisions usually reached only after long delay, sometimes not at all? If so, morale suffers and institutional esteem drops in the public mind.

5. Is personal development of staff personnel being neglected? If so, the future health of the institution is being sacrificed.

Attention of the management of one large midwestern university is being directed toward: (1) revision of the university charter and redefinition of the educational functions to be performed; (2) logical and understandable grouping of functions and clear statement of interrelationships; (3) maximum delegation of authority and responsibility to the basic points of day-to-day operational control.

Each school, large or small, requires clear thinking about such matters. Has the administrator taken the time lately to reconsider?

Is the organization sound? Solve Problem No. 3 and the management task is simplified.

RESPONSIBILITY AND CONTROL

How manage the organization to attain its objectives? This is Problem No. 4.

What responsibilities can be delegated? Which responsibilities should the president choose to retain personally? If he delegates extensively, how can he assure adequate control?

The administrator will decide, personally. The particular school has particular conditions arising primarily from the specific objectives and available staff. Success or failure is dependent upon the administrator's personal attitude and approach to the problem. Sufficient consideration of a few key principles is basic to superior management.

1. Centers of Responsibility. The history of man is in large part the story of struggle for personal dignity and individual worth. Such inner drive is to be capitalized on in the management approach. Assignment of responsibility gives dignity and worth to the recipient. Local responsibility remains the keynote of American government.

Are these comments related? How are they pertinent? Let's see.

There has grown up in the business community a concept labeled "profit center." For example, in the Ford Motor Company the responsibility for making profit is delegated to various divisions. The general manager of each division is held responsible for a certain level of profit. The "profit center" concept has proved itself, and the heart of it is local responsibility and control.

Successful educational institutions reflect the same concept. It can be named "responsibility center."

Delegation to chosen responsibility centers improves management effectiveness. There are specific reasons why this is so. They include: (1) The president can devote additional time to formulating policy, working with the governing board, planning and representing the school to its many publics. (2) Recipients of the delegated responsibilities find succor for executive growth in the challenges thrust upon them. (3) Increased personal effectiveness results for the president and his key subordinates.

The "responsibility center" concept is good, but it is not adequate. In fact, it could be an invitation to management failure. How will the president know when responsibility is not being discharged properly? Yes, in time, failures will be obvious to the chief executive — and to students, faculty, governing board, alumni and the general public. Scared? Maybe the president had better not delegate to "responsibility center"? Do it all himself? He cannot do it all—there are not enough hours in a day. Not even in the normal 30 hour day of a college president. What, then, is the solution?

2. Communication and Control. Communicate clearly and establish check points for control—that's the answer.

The president has set the objectives, established policies, and made his plans. Now, he must communicate them clearly and concisely. Then listen. Listen to suggestions, recommendations, questions. Let the ears be open and the tongues and the minds free. Soon, with proper nurture, management understanding will result.

But what about control? Who is going to tell the administrator he is failing just because the communication lines are open? Here is where facts come into play.

Standards of comparison are available. A few well chosen reports can be instituted—some verbal, some written. How do current facts compare to last month, last year, and the year before? How do they compare to plans and objectives? To other similar schools? What is the trend?

Analysis is a powerful tool. It is the key to successful management. Sometimes a "hunch" or "playing by ear" yields results. But much safer is the technic of measuring results and laying plans for the future, according to the results of the measurement.

The problems are slipping away. Four have been solved. But two large ones remain: public relations and funding.

PUBLIC RELATIONS

All actions by every individual connected with a school affect "public relations." Trite? Perhaps, but let's see.

The personal habits of the president are obviously important. Is he readily accessible? Is he punctual at public gatherings? Do faculty members participate actively in community affairs? Do they and other staff members receive new students in a cordial way? Are trustees, parents, visitors (potential donors) made to feel at home? Are the telephone operators trained to speak pleasantly and thoughtfully? Does the college spend thousands of dollars through the admissions office pointing out to students the benefits they will derive and the pleasant atmosphere in which they will study, only to have the favorable impression destroyed by a well meaning member of the business office in collecting a bill?

This, then, is Problem No. 5.

Soundness in public relations must be based upon a high level of institu-

tional prestige. Prestige is public recognition of a worthy undertaking especially well done.

FACULTY IS BEDROCK

From what do you wish the school to gain prestige? From science? From the humanities? From both? We are back again to setting objectives and the fulfillment of the charter. The foundation for public relations is the chosen areas of prestige, and, obviously, the faculty is the bedrock.

The vital instruments of public relations are human beings. They are sometimes categorized into "publics," including prospective students, parents, students, faculty and nonacademic personnel, alumni, trustees, accrediting agencies, learned societies, other colleges and universities, secondary schools, donors, newspaper editors, radio officials, and local citizens. Proper stimulus, organization and direction will result in all of these persons "working for" the college head.

Is the president prepared to take steps necessary to successful public relations?

1. Has he clearly defined the objectives, services and policies of the school?
2. Has he obtained and analyzed the reactions of the school's various publics to its objectives, services and policies?
3. Has he detailed plans for ensuring future good impressions of the school in the minds of each "public"?
4. Has he a committee on public relations policy?
5. Has he a competent director and staff?
6. Is there an adequate budget for the public relations function?
7. Does the public relations director attend meetings of the governing body so as to acquire a full understanding of policies which he interprets to the various publics?

When public relations are sound, Problem No. 5 is solved.

FUNDING

Funding is Problem No. 6. It is discussed last to emphasize that it cannot be solved until a solid foundation is laid. Solve the other five problems; then funds can be attracted more easily. But it takes hard work based upon carefully laid plans.

Anticipating an increase in enrollment following World War II, the president of the University of Michigan worked through editors, professional men, legislators and state officials to get the buildings he needed to put the university in a position to lead when the boom came.

The president started by inviting eight or 10 of the state's top newspapermen to Ann Arbor for a day as guests of the university. He explained the problem, convinced them with a tour of inspection, then requested that they print nothing until they heard further from him. After repeating this practice with several more groups of editors, he branched off among leaders in professional fields and, finally, followed the same procedure with legislators and state officials. The editors used their news stories and editorials shortly before the legislature met, and bills providing for a large number of new buildings were passed with hardly a ripple of opposition either in the legislature or among the taxpayers.

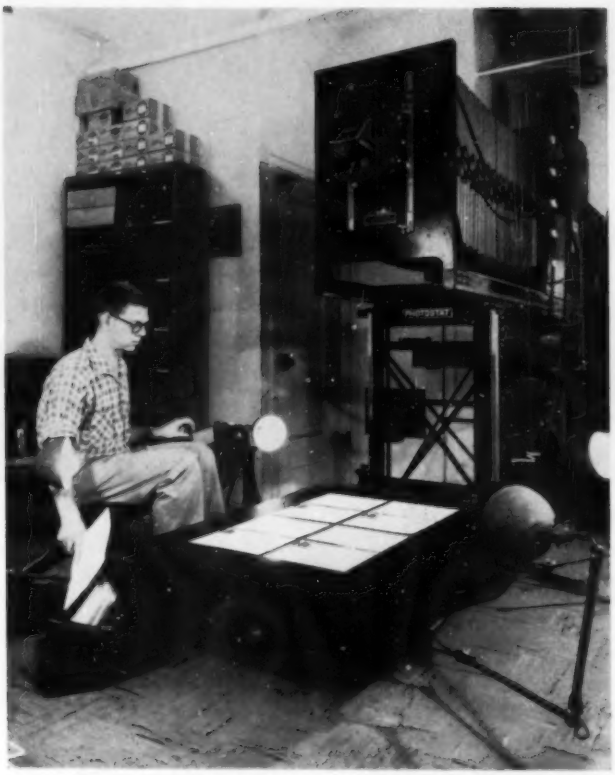
Today, for a private college, President Weimer Hicks of Kalamazoo College provides an illustration of plans and hard work aimed at fund raising. Recognizing the many facets involved in successfully raising funds he has: (1) concentrated on establishing with the governing board and alumni an agreement on the objectives of the college; (2) presented the governing board with three alternate facilities improvement plans; (3) stressed the prestige area of providing a solid liberal arts and basic science training (Kalamazoo is credited with a high proportion of scientists); (4) provided personal leadership and specific direction in organizing a fund raising campaign centering on the forthcoming 125th anniversary of Kalamazoo College; (5) written and distributed an attractive, concise booklet ("The Road to Security for Kalamazoo College") aimed at attracting bequests; (6) adapted the organization to support his personal emphasis on fund raising and on public relations.

This is the personal approach to funding. A particular set of circumstances calls for a tailored type of program.

The blessing is that the *problem* of providing higher education is becoming *shared* with the general public in a way never before experienced. Out of this sharing will come relief. The American people will respond for these basic reasons:

1. The desire to have their children better educated than themselves; knowledge that this means increased earning power.
2. The American social psychology of helping one's neighbor.
3. Belated but progressively increasing acceptance by industry of its responsibility for supporting education.

The administrator must decide which responsibilities to retain personally and which to delegate to others.



Left: Photographer in U.C.L.A.'s photographic service turns out photostats of registrar records on a mass production basis.

Photo Laboratory

reduces administrative costs of major university

VICTOR M. KELLEY Jr.
Director of Public Relations
University of California, Los Angeles

THOUGH IT IS OPERATED AS PART OF the campus library, the photographic service at U.C.L.A. has more than 350 separate customers in departments ranging from art to zoology.

Photolabs like ours record research findings on thousands of tiny lantern slides (for use with classroom lectures and at professional meetings); photocopy graphs and charts for quick dispatch to publishers and professional journals, and turn out in minutes sufficient copies of maps and illustrative material for a class of 100 students.

Our photographic service was started in 1936 by its present head, Harry D. Williams, who was a lieutenant colonel in the signal corps during World War II.

On any given day, the laboratory's nine-person staff can be engaged in a variety of activities that would bewilder the average commercial studio.

One man may be making photostats of student records for the registrar's office. Another is photo-copying a rare book for the University of Amsterdam, one of the many foreign universities serviced by the library. A third man is developing films taken of auto crashes by the university's Institute of Transportation and Traffic Engineering. A fourth may be microfilming one of the many Los Angeles area newspapers preserved for historical and research purposes in the library's department of special collections.

Mr. Williams never refuses any job. Occasionally, he may send something out to a specialist, but he always sees that the job gets done somehow the way the customer wants it.

MORE THAN PRETTY PICTURES

Darkroom men in the campus laboratory soon learn that research photography means more than turning out pretty pictures. Recently the meteorology department objected strenuously when a set of prints showing the air stream behind an airplane failed to reveal the "bubbles" necessary to illustrate the research problem.

"By the time we redid the pictures several times, the ground in the pictures looked like snow," Mr. Williams declared, "but the bubbles stood out bright and clear. The meteorology boys didn't care how the rest of the picture looked."

Photography reduces the administrative costs of running a major university. Our photograph service made duplicate copies of 40,200 library catalog cards needed to open a new branch biomedical library for the school of medicine and life science department. Copying the cards on a typewriter would have cost a small fortune. Also, photographic copies eliminated possible copying errors.

Other jobs in which photography replaces the printing press include the microfilming of all doctoral dissertations and reproductions of rare sheet music. An example of the latter was the reproduction of the original autographed copy of Mendelssohn's Symphony No. 9, written in 1878. Stanford University, which owns the original, sent it to us, and negatives were made. Now photographic facsimiles are available to schools and orchestras at $2 a copy, reproduced with perfect authenticity just as the composer set it down by hand.

The U.C.L.A. photographic service also serves as a consultant for faculty members taking pictures on research projects far from campus. Before World War II, Dr. David K. Bjork and Dr. Waldemar Westergaard of the history department went to Denmark and Sweden to microfilm hundreds of rare books not obtainable in this country. When many of these books were destroyed in Denmark during the war, U.C.L.A. helped replace them with microfilm copies taken years before.

For Both Teaching and Display of the Fine Arts

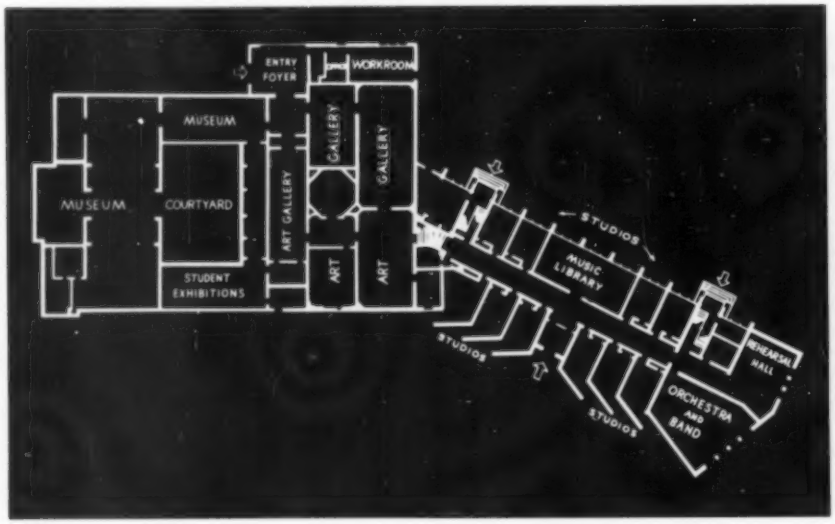
ROBERT K. JOHNSON
Business Manager, Bob Jones University, Greenville, S.C.

TO HOUSE ITS MUSIC AND ART departments and its noteworthy collections of sacred art and Biblical antiquities, Bob Jones University, Greenville, S.C., has erected a new Fine Arts Building.

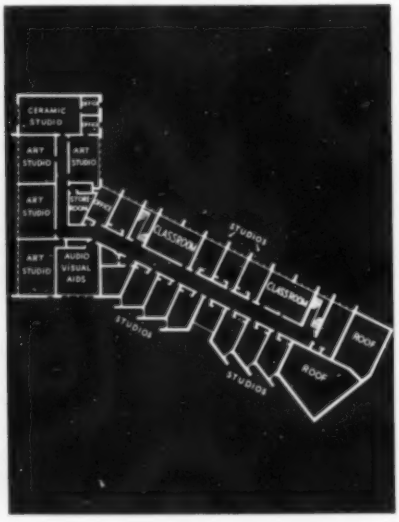
The main entrance, a rectangle of glass doors and windows framed in aluminum (cover picture), is set against a background of angle walls finished in three tints of blue ceramic brick. The opposite wall of the building, shown above, appears to be almost solid glass, with wall-to-wall windows set between huge masonry buttresses. The remaining wall areas are paneled in two tints of blue.

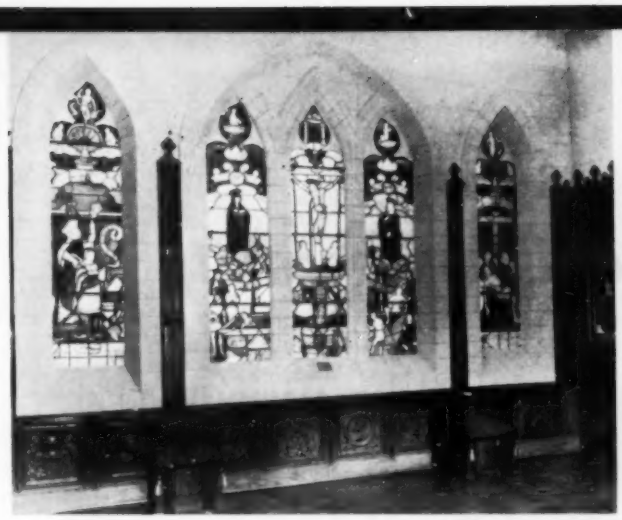
In the music wing are 23 teaching studios, three music classrooms, a large audio-visual room, two large rehearsal rooms, and a record listening room and music library. The art wing has five large studio classrooms, storage room, and faculty offices. The art gallery and museum comprise the other section of the building. Floor plans are shown below.

Floor plan of museum, art gallery and music wing



Plan of art teaching wing





Five stained glass windows in the English Gothic room of the Art Gallery are lighted from the rear. Dated 1520, these windows were once a part of the Hearst collection.

Decorated in gold, marble and dubonnet, the gallery lobby is starkly modern, in contrast to the period décor of the gallery itself. Postcards are displayed in the case.

Arched hallway has a wall paneled in carved walnut from the time of Henri II. In the niches, one shown, are Della Robbia busts of Henri II and Catherine de Medici.

Opened last September, the gallery contains paintings valued at half a million dollars. Air conditioning, humidity control and dust filtration have been installed throughout.

Galleries have suspended glass fiber ceilings, with recessed light trough angled toward the walls.

Laboratory for Research in Radioactivity

O. C. CARMICHAEL Jr.
Formerly Executive Director
Development Foundation
Vanderbilt University

Pictured is the "first step" in the construction of the A. B. Learned Graduate Science Building at Vanderbilt University, Nashville, Tenn. The building eventually will have seven more stories, possibly with intervals of years between steps. In the background is a wing of Vanderbilt's school of medicine.

VANDERBILT UNIVERSITY'S NEW A.B. Learned Graduate Science Building for research in radioactivity is a concrete example of what can be done when vision is long, initiative is abundant, but construction funds are scarce.

The 163 foot by 48½ foot three-story laboratory building grew out of what in the late Forties was a startling proposal: Pool the research efforts of physical and medical scientists who would be working in radioactivity and related fields.

Not so revolutionary but somewhat unusual in academic circles are two construction features: a design for standardization and flexibility, and a plan for construction by "steps." The present building is the first step in the construction of what will be a 10 story building, including basement. Construction by steps, and possibly with intervals of years between the steps, necessitated a design which would anticipate all major engineering requirements of the future and which would be flexible enough to provide for changing laboratory and research needs.

Learned Laboratory grew out of a dream brought back to the campus by professors who had taken part in atomic energy work at Oak Ridge and other national defense laboratories. They returned with ideas for conducting more efficient and effective research into the basic life processes.

With the achievement of nuclear fission and production of one of its by-products, radioactive isotopes, all basic and medical sciences had moved to a common frontier of knowledge. Research in chemistry, physics, biology and medicine—even more than in the past — would be overlapping and duplicating one another in the new field. The returning professors and their colleagues joined in proposing that the university construct a building that could house all the laboratories in which radioactivity research would be carried on.

Spurring the interest in planning an expanded research program for the future was a $1.2 million matching-grant made in 1949 by the General Education Board of the Rockefeller Foundation. Annual income from the grant plus the $1 million added by the university was to be used for graduate teaching and research. In the consensus of administrative officials and scientists on the campus, the additional income could be used to best advantage in a building in which laboratories of several departments would be centralized. Such a building, they felt, would have practical advantages in economy and safety as well as in education and research.

It would be more economical to construct and maintain one building than to add annexes or remodel existing structures. Also, "community" use of the heavy and expensive laboratory equipment would obviate duplication of equipment in several departments. From the standpoint of safety, centralized storage and handling of radioactive materials would permit greater protective measures.

Most important of all, centralized laboratories and cooperative research would encourage close communication between professors and students of several departments. Cross-fertilization of ideas is inevitable when there is exchange of information, experience and progress reports.

The site selected for the proposed building was adjacent to the school of medicine but also close to the three science buildings of the college of arts and science and graduate school. The late Donald Southgate, Nashville architect, was asked to work closely

with the scientists in preparing a blueprint for the proposed building.

Two of the many statements on record from that stage in planning illustrate the foresight which went into the building.

Dr. John B. Youmans, dean of the school of medicine, in his negotiations with the U.S. Public Health Service for a cancer research grant toward construction of the laboratory building, stated:

"Facilities thus will be adjacent to the [school of medicine's] departments of physiology, pharmacology, biochemistry, pathology, bacteriology and anatomy. . . . The clinical departments will have ready access to the new facilities through the existing, preclinical departments. Neighboring buildings house the natural science division of the college and graduate school.

"It is our plan to extend this work [research in radioactivity] primarily in the direction of an understanding of basic life processes. It is the plan that in the building here proposed all the scientific disciplines can be brought to bear on this problem [cancer]. Here there would be chemists, physicists and biologists, not necessarily working directly on the cancer problem but always available for help to those who are. It is our concept that it is the function of a university to engage in fundamental research in the broadest sense of the word. It is further our concept that the cancer problem is best attacked at the present time through basic research, and that research in apparently unrelated fields may be much more relevant to the problem than direct work with cancer patients."

Dr. Dwight C. Bardwell, a consultant in the natural science division and formerly building program administrator at Oak Ridge, interpreted the plans as follows:

"Modern science requires coordination of research contributions from the many fields. For example, physicists, physical chemists, analytical chemists, and mathematicians are playing essential rôles in biological and medical research. The building will bring these various skills together on programs requiring coordination. Modern science requires increasingly elaborate and consequently costly experimental equipment. The location of mass spectrographs, ultraviolet spectrographs, infrared spectrographs, x-ray equipment, electron microscope, and radiochemical laboratories in the new building is the only practical approach to joint use by the various interests. Thus, the laboratories in the building will not supersede the laboratories of the separate departments on the campus and in the medical school but will supplement them to meet the newer needs."

An estimated cost of $2.2 million came along with the blueprint of preliminary plans, which were submitted in January by E. E. Bryan, building and grounds superintendent, to Treasurer A. B. Benedict, coordinator for the project.

Problem: Shortage of construction funds.

Vanderbilt had conducted four separate capital funds campaigns since the close of World War II. These funds, totaling more than $8 million, had gone into, or were committed to, endowment of the school of law and construction of housing, feeding and other essential campus facilities for the bulging student body. Nationally, the postwar enrollment in colleges and universities had increased about 66 per cent. Vanderbilt's enrollment was up 80 per cent and was still climbing. While the board of trustees and the administrative officials were reluctant to launch another campaign for building funds, they were determined to maintain the university's research programs in basic and medical sciences.

Decision: Start with what they had.

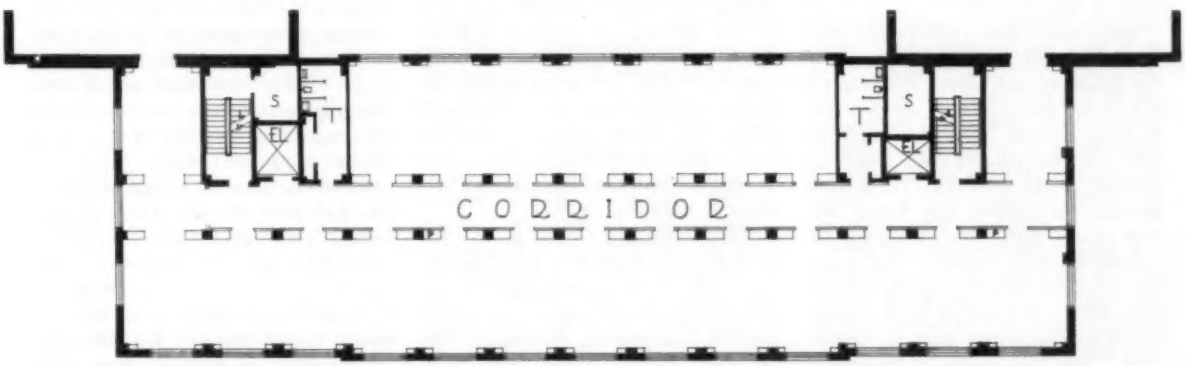
What they had were a building site, a tentative commitment from the U.S. Public Health Service for a $126,135 grant toward construction of a cancer research laboratory, and loyal alumni and friends who could be counted on to contribute enough to bring the initial construction fund up to about $300,000. This amount, plus any sums the university might be able to spare from its general funds, would be a beginning.

Solution: Construct the building in steps, putting emphasis on a standard design and flexibility.

The idea of standard design had been growing in industry for about 30 years as the only practical method of anticipating changing laboratory needs. It was, however, comparatively new in academic circles.

Construction plans include: concrete foundation (strong enough for nine stories); reinforced concrete framing with exterior walls of brick backed up with concrete block; tile and concrete floor slabs; asphalt tile flooring in laboratories, terrazzo floors in corridors and ceramic tile in toilets; metal door bucks; flush solid core doors; fluorescent lighting; complete summer and winter air conditioning; acoustic ceilings in corridors, and 20 year bonded built-up roof with copper flashing.

Typical of the planning for possible future needs that could not be



TYPICAL FLOOR PLAN

SCALE

Physics laboratory in the A. B. Learned Graduate Science Building.

precisely anticipated is the storage room in the basement. The room is designed for 1000 pounds per square foot. The remainder of the building is designed for 100 pounds per square foot.

Providing for and anticipating the changing nature of laboratory needs are such features as load-bearing walls, movable lateral partitions, open utilities, and vent hoods with individual exhaust fans.

The columns in the exterior walls and along the corridors are spaced on 12 foot centers parallel to the corridors. Distance from corridors to exterior walls is approximately 20 feet. Floor space, therefore, may be divided into multiples of 12 feet by 20 feet, assuring convertibility to almost any kind of use.

Rectangular slots (soft plugs) were formed in all floor slabs except in the basement and in the roof (which is a future floor). There are two slots at each column, placed on opposite sides of the column and lined up parallel to the corridor. These slots provide for present and future vertical utility lines, such as piping for various services, conduits and ducts. The slots are tapered slightly and are filled with a mixture of sand, cement and a soft aggregate such as vermiculite. The filler easily is penetrated for pipe sleeves and also easily can be removed and replaced. The vertical utility lines could be enclosed. Left open, however, they provide for changes without tearing into walls.

Worth noting are the hoods, plastic tile floors in all laboratories, and the circulating hot water system. Instead of having hoods connected to a central exhaust system, each hood has its own exhaust fan, preventing a mixture of gases that might be dangerous. This type of vent system is more expensive than a central system, but it is much safer for the type of research being carried on in Learned Laboratory. Also, the hoods are made of a wallboard material. Should a section of a hood become contaminated, that section can be replaced easily and inexpensively.

The plastic tile provides for the same contingency. In the event of spillage of radioactive materials, pieces of the tile can be replaced without large sections of the flooring being torn out. The hot water system includes two pipes, both covered, through which hot water circulates continuously. There is no loss of water while waiting for a desired temperature, and there is little loss of heat.

Thus, construction plans provide for flexibility in changes of space assignments and in the continuing removal and installation of highly specialized research equipment. Alterations can be made without tearing into walls or doing extensive work on the roof. Vent ducts can be taken on up as additional floors are added.

Standardization increased the flexibility. The design calls for seven "standard" floors. These seven floors (from the second story through the eighth) will be identical. Each will have 8000 square feet of space, with 6720 square feet of working space. Because of the terrain, the basement is a little shy of 8000 square feet. In the basement are the storage laboratory and the building's workshop. The ground floor is broken by an open passageway into the court of the school of medicine. The top story will house building equipment.

Standardization—as much as possible where research projects vary so much—carries over into furnishings. Regularly demanded items such as hoods, tables, sinks and desks are in standard arrangement but more than half the space is left vacant for special laboratory equipment.

The construction contract for the first three stories was let in 1951, but work was delayed pending priority for reinforced steel, copper and electric conduit. By fall of 1953, the shell of the building was complete. There work stopped for several months. For the building to be useable, it needed wiring, piping, furnishings and standard fixtures. But the funds were exhausted.

In 1954, A. B. Learned, a Vanderbilt alumnus, heard of the stalled construction and donated $75,000 for finishing the building.

During 1954-55, the various departments which would use the laboratories were busy rounding up research grants, contracts and laboratory equipment. By January 1956, when research work began in the building, laboratory equipment included a Craig counter extraction apparatus, Berkeley decimal scalers, a jerked-bed-continuous-ion-exchange column, a sodium iodide scintillation spectrometer, a recording spectrometer, an infrared spectrophotometer and an electron microscope. Being assembled was a new beta ray spectrometer for low energy beta particles. En route was a new 80,000 r.p.m. centrifuge.

As of last June 30 a total of $394,164 had been put into Learned Laboratory construction and furnishings (excluding laboratory equipment). Of that amount, $126,350 was from the National Cancer Institute of the U.S. Public Health Service; $75,000 from Mr. Learned, and $192,814 from gifts to and funds of the university.

Building and utilities had cost the low sum of $16.20 per square foot.

The Budget Doesn't Belong to the Business Manager

Rather, it's the instrument of the president

HARDING B. YOUNG
Assistant to the President, Agricultural, Mechanical and Normal College
Pine Bluff, Ark.

Concluding a two-part series begun last month

IN THE AREAS OF SMALL COLLEGE administration and control, my Harvard studies uncovered many problems in the purchasing, administration and control of major items of expense. Some of these problems follow.

Case 3 is another problem in the administration of budgets.

Case 3

This case would have been well handled had the purchasing agent stopped to get all the facts before denying the request as being contrary to statute. Perhaps, the machine is special purpose and so actually is the cheapest of its type. In this case, a telephone call to the farm manager would have clarified the point.

Who should prevail in such cases as this one between the farm manager and purchasing agent relative to requests for special brands? As problems of different brands arise it might be worth considering separating savings effected by departments, as some department heads would doubtless be more amenable to experimenting with other brands. These savings can be credited to the budget of the departments in question in the subsequent periods. Soon the word will spread and requests to be included will mount.

Case 4

Aside from the problems noted in the area of procurement, problems often arise in fixing responsibility for control. Case 4 is one instance.

Here the budget officer not only provides control technics but assumes the major responsibility in the control of expenses. His attempt to check on the needs of the departments not only is in the best interest of guarding the cash position of the college but is in an effort to make sure each department is treated fairly and each gets his share of what is available.

If the department heads are ultimately responsible for control of their budgets, one might raise the question: Why not give them leeway to do as

Purchasing Controls and the Budget Officer

Case 3. For a long time a small college had been thinking about centralizing its purchasing function and to that end hired a new purchasing agent. Some question arose as to the authority of the purchasing agent to pass on equipment for the college farm.

The manager of the farm sent in a requisition for an International Harvester hay baler, noting that this brand of baler had certain special features. The purchasing agent explained that he could get a baler equally as good from another company at a lower price and insisted on ordering it. Further, he stated, the fiscal code of the state required that the cheaper one be purchased.

The farm manager insisted that if he could not have the equipment he needed he would not bale the hay. Feeling that the purchasing agent was trying to ingratiate himself with the business manager and the president, the farm manager went to talk with the president about the authority of the purchasing agent. The president directed the purchasing agent to buy the International baler.

Case 4. Following the failure of the budget officer to approve a request of a department head for a Royal typewriter, the question arose in the administrative council as to the authority of the budget officer. The budget officer had been employed by the president, made responsible to the business manager, and charged with the responsibility for controlling the budget.

The requisition for the typewriter had been made out by the department head and sent to the budget officer for approval. Rather than approve the requisition and send it to the purchasing agent for purchase, the budget officer returned it to the department head with a statement, "Please re-submit at a later date. Your budget is already one-half expended; at this time it should be only one-third expended."

Even the dean of instruction had become concerned about the authority of the budget officer after the budget officer had vetoed a request for an additional staff member submitted by the dean. Some of the

(*Continued on Next Page*)

they please? What purposes are served by having the budget officer approve the request, especially in view of the fact that the department head had appealed to the business manager and the president and the additional fact that the budget is a fixed budget? First, it gives the budget officer a chance to check the reins to make sure the requests do not exceed budget allowance, rather than closing the gate after the horse has gone. Second, department heads consider their needs more carefully when they know they are subjected to the scrutiny of a control specialist. An additional consideration is that the budget officer can check for rate of expenditure, as in this case, and can apprise the business manager of the possible effect this will have on the current financial position of the college.

According to some business managers, this type of control is indeed necessary, as many department heads rush to expend their budgets early in the fall only to be embarrassed in the spring. In the words of one business manager: "They spend all their money in the fall buying expensive equipment and can't buy frogs in the spring on which to use the equipment."

In Case 4 the gain should be balanced against the loss created in terms of good will. The question of the ability of a control specialist correctly to appraise the departmental needs has great significance. Perhaps the fact that the department head has the right of appeal is sufficient to solve resultant problems. This, however, is doubtful when the business manager and the budget officer see eye to eye, as is quite possible in view of their similar orientation. The president may be a man so busy with fund raising as to be unaffected by such detail. Consequently, the departmental requests may not get proper attention.

ALTERNATE APPROACH

An alternative approach is followed by some small colleges in which the responsibility for control rests with department heads and the business manager acts in an advisory capacity only. Requisitions, while routed through the business office, are checked against budget allowances only, as the business officer does not have authority to deny the request unless it exceeds the budget allowance. He does hold conferences with department heads, checking on needs and making suggestions. In cases in which he does not think the expenditure warranted he checks with the dean of instruction and divisional directors. In this way the business manager is allowing the department heads or the line organization to assume full responsibility for control of expenditures while he is more concerned with top level control technics.

In situations in which department heads take their responsibility lightly and the need for control at the college is urgent, the business manager may look behind requisitions to investigate needs as the business offices of some small colleges do. This procedure will not only make department heads more careful in submitting requests but, when the savings resulting from the business manager's checking are credited to the departmental budget, as has been noted in one case, it should make the department head more receptive to the over-all budget control mechanism.

Another control technic is the establishment of dollar limits. When, because of financial expediency, a true fixed budget cannot be set up, a modification can be substituted, as, for example, a fixed budget by months. Under this plan the amount that each department may spend is set up by months with some flexibility for equipment purchases.

On balance, it is felt that responsibility for control should rest with the line organization. Otherwise the business manager will face too many conflicts in making a distinction between his duties. As has often been said, he tends to see the budget as his own and becomes overzealous in protecting it.

CONTROL BY ITEM vs. CLASS

A frequent problem concerns the decision as to whether to control expenses by item, major classifications, or over-all appropriation, allowing shifts at the discretion of the department head. Feelings about this practice vary considerably among the institutions I visited.

Some business managers believe that total departmental appropriations are proportionately so small as compared to maintenance and overhead, and in view of the fact that the control of salaries is usually the responsibility of the president and the dean, that an attempt to control appropriations by items is not worth the trouble. In this situation one business manager attempts to control items by requiring department heads to budget by detail items, *i.e.* the budget request is broken down in far more detail than is the budget as it is released. He admits that this control technic is one of psychological nature only. Others believe that, to be effective, control should be by item where equipment is involved and by class in the case of instructional supplies.

What are the advantages and disadvantages of control by item, class or total appropriation? Not to permit shifts within broader classifications

Case 4—Cont.

questions raised were: What right of appeal do department heads have? Is the budget officer in a position to appraise the actual needs of the departments?

The president stated in the meeting that he was in sympathy with points of view expressed and cited an experience he had had with the budget officer, but added that later reflection enabled him to see that the budget officer was performing the job assigned to him by the president—control of the budget.

The fiscal year of the college began in June and the budget was administered in such manner that one-third was used each four months. The budget officer controlled expenditures in accordance with the plan. His approval also consisted of a check to determine if funds were available in the departmental budgets to cover requisitions and the need for the items. According to the budget officer, the department heads were held responsible for control of their budgets, but the budget officer had to take the initiative to ensure compliance with these regulations. He also stated that few of the department heads would actually assume the responsibility of controlling their own budgets. He said that he questioned unusual items and required them to have approval of the business manager and the president before he would pass them on to the purchasing agent. "My job," said the budget officer, "is to see that they don't overexpend and I don't take that responsibility lightly. I know I am regarded as the meanest man on the campus. When it comes to my job, I don't play, and that is generally known around the campus. A budget officer has to be firm when he knows he is right regardless of pressures."

forces the department head to budget more closely at the time of preparation, as he knows he must include all those items he hopes to purchase during the year. Control by detailed classifications makes it more difficult to conceal padding of the budget. Too, the department head will give more thought to expenditures and weigh more carefully the merits of items in the various categories—resulting in not only better purchasing but possibly better control. Further, the practice of discouraging shifts leads to better control in future periods. That is to say, better data can be collected on the cost of operations and better comparisons can be made.

On the other hand, certain disadvantages arise. In the first place, when the budget is broken down into a number of small items it may be difficult to plan in the best interests of the department. A department head may feel, subsequent to the budget's formation, that it is better for his department to forego certain items and make substitutions, as, for example, travel for equipment. Or he may desire to supplement travel with part of the appropriation for supplies. Such a situation can arise as a result of price changes, emergency situations, or poor budget estimates.

The way shifts are handled in the foregoing situations depends on the business manager's idea of a budget and what he intends it to be. As one business manager puts it: "There is no point in sticking to a budget because it is the budget. Where the budget is a strait jacket it is merely a justification for falsification of expenses." Where needs for shifts are glaringly apparent, it makes for better control, through comparison in later periods, to make the shifts and record the transfers. This procedure is, of course, accompanied by the disadvantage of additional bookkeeping, warranted, however, under the conditions.

On balance, it is felt that permission to make transfers among appropriations is desirable if a statement setting forth reasons for requesting shifts is submitted. The thinking of one business manager relative to his present system seems to summarize my views on control by item *vs.* control by class.

"If we were to consider a change in our system, it would probably be in the direction of decreased detail. It might be possible to consolidate accounts for budgetary purposes into fewer categories and thereby give the college deans and administrative heads more flexibility among accounts. This could be accompanied by putting a limitation on the type of expenditure made with the surplus of one account for accounts in which the budget has been depleted. The limitation would be that such added expenditure does not commit us to a continuing expenditure for future years.

"For example, the hiring of a person late in the year because funds have remained in excess of anticipated needs in an account such as supplies would be commitment for the next year and would result in a spiraling of costs. However, funds remaining in a supply account might be used with good effect for the purchase of an additional brochure without resulting in a commitment for future years' expenditures.

"Such a consolidation would relieve the president's office of some work and would give the operating department heads more flexibility."

CONTROL OF SALARIES AND WAGES

Salary and wage expense, aside from being the biggest item in the budget, is the most inflexible item in the short run. Because of its size and inflexibility, many budget problems center on this expense.

It is extremely difficult to estimate salary and wage expense in advance.

Presumably, salaries would vary directly with the size of the enrollment. For several reasons, this is not necessarily the case. In the first place, there is the necessity for hiring a "whole" man as the need for another section of a course arises. Second, in the short run salary expense is inflexible because of the necessity of contracting faculty in advance of knowing what the actual enrollment will be. Third, college administrators are reluctant to terminate services of professors as enrollments decline. Fourth are policy considerations relative to quality of instruction, number of courses offered, rank and tenure, attempts to upgrade the faculty, and retirement age.

Salary expense, unlike maintenance, is not postponable in the short run. In the long run it is perhaps the most flexible item in the college budget. Factors accounting for this are: (1) Total expenditures for salaries can be reduced by failing to fill employment vacancies, thus requiring professors to cut across disciplines or carry heavier teaching loads; (2) the size of the faculty can be reduced for future periods, and (3) salaries of current personnel can be reduced. The big decision comes in determining which of the three avenues to follow, as trouble is in store on each one.

When the first method is chosen, unfortunately, the most desirable members of the faculty resign. The president of a small state college tried the second alternative and encountered a host of human problems. The professor of chemistry said he found it extremely difficult to teach freshman composition. Similar frustration occurred when a young professor of mathematics with no previous experience found that he had standing room only for a class in biology. Though no example comes to mind at the moment, it certainly seems less desirable to take the third route, because, aside from the possibility of losing able professors, it does not seem appropriate to reduce the salary of an already underpaid group.

The decision regarding the quality of instruction has an important effect on the college budget. This decision involves setting an educational standard, and this was outside the scope of my research. The policy of granting rank and tenure, though very desirable, can have a tremendous effect on salary expense. Aside from tending to fix salaries at a higher level, the per student cost of instruction goes up as the faculty becomes stabilized, on the assumption that enrollment remains the same. The experience of one small college will point out more clearly some of the problems.

Case 5

The granting of tenure to all holders of the Ph.D. will mean two things: (1) a definite incentive for other members of the faculty to obtain the cherished degree, and (2) the per student cost of instruction will rise. As more and more of the faculty members earn the doctorate, thus moving

Faculty Tenure Puts Strain on Budget

Case 5. In an attempt to meet regional accrediting standards, a small western state college faced a number of problems. First, it had to employ holders of the Ph.D. degree and encourage present members of the faculty to do advanced work by assisting them financially, when possible, through a liberal system of sabbatical leaves and special leaves for summer study. In order to attract holders of the doctorate and to compete with business and industry, it became necessary to pay all such persons the upper limit of the rank. All Ph.D. holders were given the rank of professor and paid the same premium salary. Because of the difficulty of locating interested professors, they were employed without regard to their age. In many instances substitute instructors were employed to fill leave vacancies but because of added course offerings they were retained permanently.

The number of courses offered has increased considerably in the last decade. Inasmuch as the college had a policy of keeping instructors in their major discipline, the addition of courses necessitated the hiring of additional faculty members even though the faculty-student ratio was low.

The inability of the college to take a long-run view toward stabilizing its faculty promises significant budgetary implications for the future.

to the higher salary range, total salary cost not only rises (if same number of faculty is maintained) but per student cost, as lower level faculty members are the first to be released or given shorter term contracts. Also salaries tend to become fixed at a higher level. The snowballing effect of the problem becomes even more acute when all professors with equal training receive the same salary.

The employment of Ph.D. holders without regard for age will probably give rise to other cost problems. This could mean that a large number will retire at about the same time, thus creating a number of open high-salaried positions in the same year. If ages had been considered, some indication of high-salaried positions to be open in any given year could have been determined and more adequately planned for. Too, a considerable number of professors could become eligible for sabbatical leave about the same time. Even though substitute professors usually do not receive the same salary, total salaries rise as professors on sabbatical leave receive one-half salary.

One of the most serious difficulties arises out of the failure to fix the number of courses and the class size. These are primarily educational decisions, but they have tremendous budgetary implications. It seems that one of the best ways to control salary expense is to control course offerings. The problem comes in deciding what courses are essential and what are of a luxury nature and can be sloughed off.

Aside from the obvious increased costs associated with faculty expansion, there are certain hidden costs that do not come to light until later. For example, when a new professor is hired the college may commit itself only for the additional salary in the first year but in subsequent years there will be demands for office space, office equipment and, finally, a secretary, to say nothing of the increased utilities, added teacher retirement contributions, and social security payments. In one small college in the last few years six permanent classrooms have been converted to offices, not only creating an acute shortage of classroom space but at the same time increasing the total bill for utilities and equipment.

Harvard College tried to reduce to a formula its method of controlling salaries in the social sciences division. For making permanent appointments to its faculty the college has what is called the Graustein formula, adopted in 1941. This method sets a quota for each department. Relative to this formula, the president of the board of overseers once remarked: "It is based on the assumption that the relative scope and importance of fields of learning are reasonably stable and foreseeable. It is based also on a political assumption that more harm than good is done to the pattern of faculty feeling and effort by reducing departments."

On the basis of my research, it seems essential to the coordination of financial and educational decisions to have not only a good financial man as business manager but a good administrator. The business manager has to be able to sell the budget principle to both those above him and those below him. His ability to do this depends on how he perceives his job—what he thinks the purpose of budget is.

When used as a pressure device, the budget can become a damaging instrument to faculty morale and to the college program. When used as a plan, the budget becomes a disciplined approach to problems. Solution to these problems depends on development of proper attitudes among department heads. An overzealous attempt on the part of the business manager and the president to control the budget can be interpreted by department heads, not allowed to participate, as niggardliness. This leads to defensive attitudes. If the business manager sees the budget as the whole program of the institution—the instrument of the president—his action will be different than it will be if he views the budget as his own instrument, embodying a series of "Thou shall not's."

In the budgetary process there are likely to be misunderstandings on both sides—inability of department heads to understand and appreciate the financial problems of business manager and president and inability of the business manager to understanding the problems of department heads. Patience, time, hard work, and wide participation in the budgetary functions will minimize such misunderstandings.

THREE CONTROL TECHNICS

Control technics found in my research were of three types: before the fact, during the fact, and after the fact, each of which can be questioned on logical grounds. The practice of requiring department and division heads to reduce to writing their anticipated needs for the succeeding year forces them to plan better, thus minimizing the number of ill considered and unwarranted expenditures. The requirement that requests be reviewed by the business manager relative to need and item appropriation, together with the check by the accounting division on available budget balance to cover, reduces the possibility of departmental budgets being overexpended and enables the business manager to budget cash better. The analysis of budget variances and the disposition of budget balances enable the business manager and budget committee to budget more objectively in subsequent periods. #

The News About Nutrition Is Encouraging

Advances in food production and processing provide the food service director with administrative tools that will increase efficiency and decrease food service costs

COL. PAUL P. LOGAN
Director of Research
National Restaurant Association

THE AGRICULTURAL ASPECT OF FOOD has, in our time, provided a stream of miracles of incalculable benefit to this and future generations. Farming has become big business, mechanized and geared for mass production, operated by expert management and under scientific guidance. Analyses of soil and climate have enabled the introduction and use of things best suited for production in any specified area. The science of genetics has brought about products which are more prolific and have greater resistance to disease.

NEW USES FOR BY-PRODUCTS

At the same time a host of new uses has been found for by-products which yesterday were considered waste material. More than 200 profitable products are now produced from the corn plant. Today in the great corn belt more than 90 per cent of the corn is hybrid and the yield per acre 200 per cent more than it was at the turn of the century.

Great advances have, in like manner, been made in the production of all basic grain crops. The same is true of the entire list of vegetables and fruits, many varieties of which have been developed for special uses. This applies to apples, strawberries, melons, potatoes, peas and other products. Some apples are especially flavorful and good for use as fresh fruit, but are not satisfactory for canning or freezing. Only one or two varieties of sweet peas are suitable for freezing —while many varieties of both sweet and early June peas are excellent canners.

Livestock production has undergone tremendous changes. Beef cattle in the Hereford, Angus and Short Horn breeds have been highly developed. These breeds do not thrive in hot or tick infested areas. There is one breed, the Brahman from India, that is immune to ticks and which thrives in heat. The cross breeding of the Brahman with the Short Horn has developed a new type called Santa Gertrudis, and a similar development with the Hereford breed is well under way. These cross breeds are immune to ticks and will thrive in the year-round grazing areas of the South.

Cheap feed in the form of citrus pulp is also available in the Southeast. It is made from the production residue at the citrus juice plants.

REMARKABLE DEVELOPMENTS

Developments in animal feeds and feeding have been remarkable. Practically all feeding is now on the basis of a perfectly balanced diet with special attention to the quantity and quality of the protein content. One recent development which may very well change the entire economic side of feeding cattle is the use of a chemical called urea, obtained from nitrogen in the air. Combined with ground corn cobs, corn stalks, and other cellulose matter, it provides a satisfactory feed.

Another development of importance was the production of a synthetic milk for little pigs. A little pig has to get its start in life on mother's milk—no other milk will do. It took a lot of research and developmental work to duplicate sow's milk synthetically. The practical value of this development is that it will enable the swine producer to save more pigs per litter—probably cut the losses 50 per cent, and practically eliminate the type of pig commonly known as a "runt." Most of the loss results from the fact that a sow is a clumsy beast and is likely to lie down on and crush some of her babies in the first two days after their birth. Now, with synthetic milk available, a sufficient number of the little pigs can be removed to minimize the crushing hazard, and they can be nipple-fed by a machine especially developed for the purpose. Pigs fed in this manner grow faster and sturdier.

POULTRY THIRD IN VOLUME

Poultry ranks third in the volume of meat used by our people, its consumption rate exceeded only by pork and beef. Here again, we are reaping the benefits of scientific research and developmental work. One of the best things that ever happened to the public feeding industry was the development by the United States Department of Agriculture of the broad-breasted bronze turkey. In most places it is now a year-round item, used for a wide variety of attractive dishes. Any food service establishment using turkey for fewer than 10 different dishes should promptly get a copy of the National Restaurant Association "Turkey Handbook" and carefully study this fine quality and profit making meat item.

A few years ago science entered the field of meat-chicken production. Today we have broiler-chicken production

plants that operate with the precision of any modern factory. This part of the poultry industry has grown into three separate but inseparable industries. First is the hatchery that produces day-old chicks for the farmer, second is the great feed manufacturing section, and third is, of course, the production of the meat chicken. This group is constantly concerned with the development of better meat chickens and ways and means of reducing losses. The farmer now handles 10,000 chickens in one 40 by 250 foot shed where heat, light, automatic feeding and watering, and sanitation are controlled with exactness. At the end of 10 to 11 weeks the entire flock is delivered to a chicken processing plant where, under the most modern conditions, the birds are made ready for market. The farmer produces four flocks per year. The processing plant, by contractual arrangement, staggers production among the farmers so as to receive about an even flow of incoming flocks every week.

ALLIED INDUSTRIES COOPERATE

Allied industries, such as the feed manufacturers, machinery and equipment people, are all integrated into the research work. There are now at least a half dozen areas where broilers are produced in large numbers. This industry has and will continue to have a powerful influence on the national meat economy. Because of the relatively short cycle of production, it is able to level the peaks and fill the valleys in the much longer production cycles of swine and cattle.

The sister industry of the broiler production is, of course, the egg industry. A whole book could be written on the research and developmental work in that field. Suffice it to say that special strains of egg producing hens have been developed; cannibalism, which caused substantial loss of chickens in the past, has been eliminated; culling of flocks is now scientifically done; attention has been given to egg shell thickness—which presents a marketing hazard—and the mechanics of harvesting, grading and storing eggs on the farm have been greatly improved.

Fish and seafoods also have received a big share of scientific attention. A major part of this has been accomplished by industrial organizations with the assistance or under the guidance of the commercial fisheries division of the Fish and Wildlife Service, United States Department of the Interior.

Because of the rapid action of surface bacteria, fish stale in a short time even when packed in ice. Temperatures at or below zero are required for good storage. The problem of staling is largely solved by quick freezing the fish as soon as they are taken from the water. But since only a limited amount of fish is marketed in round-dressed form, and the bulk is marketed in filleted or other processed form, the fish frozen at sea must be thawed, processed and then refrozen. This has an adverse effect on texture and flavor. The problem may now be partially solved by the use of an antibiotic dip.

The salt waters of the earth hold a limitless potential in food resources. Scientists can now foresee the possibility of the production of sufficient food for all the people on earth from the single-celled sea growth known as plankton.

These remarkable improvements in production would have only limited value, however, except for equally noteworthy improvements in the science of food preservation. Within this field contributions are steadily being made by physicists, nutritionists, packaging engineers, chemists, food engineers and food technologists, and refrigerating engineers. The objectives are to harvest each product at its most desirable stage of growth and development, to handle it from the instant of harvest to the point of processing by methods designed to cause the least possible loss of color, flavor or nutritive value, and then, with all possible speed, to apply some means of preservation that will prolong its useful life.

CHANGES IN POTATO MARKETING

The handling of potatoes is a good example of applied technology, and great changes are currently taking place in potato marketing as the logical result of that work. It is known that a potato which is heavy in starch and which has a specific gravity of 1.09 or more is almost sure to be a good baker and a good masher, regardless of variety or place of origin. Conversely, one that has a specific gravity of 1.07 or less will seldom be satisfactory for baking and mashing but will be good for salad work. A marketing test on the basis of specific gravity proved that consumers are ready and willing to pay a reasonable premium for potatoes that are best suited for the end product desired.

Nearly all large cities are today being served with commercially peeled potatoes which are chilled and dipped in a weak sulfite solution to delay darkening and discoloration. These potatoes are sold to the public feeding industry in boiler form and cut for deep frying. Within the last three years, potato processors have launched a new type of processed potato. It is cut for deep frying, partially cooked in deep fat, and then frozen. These potatoes are almost ideal for the average restaurant. They are cooked from a solid frozen state to completion in about four minutes, absorb less fat from the kettle, have a splendid color and good texture—and they eliminate a lot of kitchen labor.

SOLVES POTATO PROBLEM

Everyone knows that it is difficult to make good mashed potatoes from new or early crop tubers. Some years ago one or more manufacturers started to produce dehydrated, granulated, late variety potatoes which could instantly be made into mashed form. The product was good but a little too exacting in its reaction to variations in the quantity and temperature of added liquid. After three years of research, the eastern regional laboratory of the Department of Agriculture has produced a dehydrated potato flake which is much more tolerant to temperature variation of the added liquid and which produces splendid mashed potatoes. The first marketing test of this product was made last year. It is safe to predict that it will solve the potato mashing problem—and will become an item of constant use.

One of the most successful of tests on food preservation by ionizing radiation—atomic energy—was that made on potatoes. Potatoes treated by gamma ray radiation remained in perfect condition without sprouting or deterioration for more than one year. No one can predict just where that test will lead but it is quite probable that sometime in the future practically all sound and unblemished potatoes will be irradiated before marketing. Potatoes are now being canned and, of course, the potato chip industry has grown to a point where it accounts for a substantial percentage of the crop. Thus it is that the king of all vegetable crops is finally coming into the sphere of scientific preservation.

In the field of fresh fruits and vegetables a lot of attention has been given to the control of enzymes by quick

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St. Ignatius School
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cooling in the field at the time of harvest, and to types of packaging material that will exclude most of the oxygen without smothering the product. All products are living, breathing things, and the rate of respiration is controlled by temperature—the higher the temperature, the faster the breathing. All of these products contain enzymes which bring about changes in composition and texture. In some instances the enzymatic action changes sugar to starch—as in the case of sweet corn—which is undesirable. We now know that the respiratory rate of sweet corn is 11 times faster at 86° F. (cornfield temperature) than at 40° F. An ear of corn held at 40° F. will be as good at the end of the eleventh day as one held one day at 86° F. This fact has been used in a tremendous marketing program by a large southeastern company.

ELIMINATE STORAGE HAZARD

Apples held for three days after harvest at orchard temperature (around 80° F.) will lose 30 days of storage life. Apples placed in ideal storage temperature continue to breathe and give off a pronounced aroma. This aroma will cause surface deterioration commonly known as "scald." Today this storage hazard is eliminated by drawing the air of an apple storage room through activated carbon.

Head lettuce is no longer processed through a packing plant, crated and iced; it is packed in the field into cardboard cartons, rushed into a huge vacuum machine where the temperature is immediately dropped to below 50° F.—and it is shipped dry in refrigerated cars to market.

One of the outstanding developments which has taken place in the field of canned foods is a new method called "aseptic" canning. Thus far it can be used only for liquids, but the method will undoubtedly be extended to other things later on. This method eliminates the need of heavy and prolonged retort cooking which has to be done in order to make products commercially sterile. The heavy cooking is the reason canned products have a flavor different from fresh products. There are indications that aseptic canning may ultimately be used for the marketing of fresh fluid milk.

The freezing preservation of food became a commercial industry of importance less than 30 years ago. Today it is an important part of the daily life of every American. Its use has brought our orchards and gardens, forests and fields, streams and vineyards into every corner grocery store in the land. It has enabled people in all walks of life to store in their homes for immediate use a variety of foodstuffs which their own fathers could not have obtained for a king's ransom.

At the end of the war, when canned foods were difficult to obtain, several companies started into the business of freezing precooked foods—which were not rationed. The cost was high and in a number of cases the products were not very acceptable. As soon as canned goods became available in abundance, the frozen precooked foods practically disappeared from the market. About six years later in 1952 they began to appear again, and products such as chicken and turkey pot pies, which sold at a reasonable price, were accepted by the public. Since that time precooked frozen foods of almost endless variety have come onto the market, and the volume continues to grow and varieties to increase each year.

In 1955 the production of frozen foods in the United States totaled 7.4 billion pounds, an increase of about 58 per cent over the 1950 production. The major part of this phenomenal growth was due to citrus concentrates and cooked foods, the former increasing from about 400 to 800 million pounds and the latter from practically nothing to 558 million pounds.

OPENS UP NEW FIELDS

Consumer acceptance of frozen cooked foods sold through grocery stores has opened a new and unlimited field to restaurant operators. Since 1950 a number of large restaurants have gone into food freezing on a large scale, selling their products through retail outlets and through their own "carry-out" department.

One current research project of interest in the field of frozen food is that of frozen fried chicken. Everyone is familiar with the black bone condition which follows the freezing of young and tender chickens. This condition is caused by the seepage of blood through the porous bone structure from the bone marrow. This condition in no way affects the quality of the bird but it does have a pronounced effect upon its salability in restaurants. If the bird is cooked before freezing, there is no bone discoloration. The U.S.D.A. western regional laboratory, in its studies on precooked frozen chicken, has found that it has a storage life of approximately six months at 0° F.

Another research project of great significance is that of condensing high quality fluid milk, packaging it in hermetically sealed containers, and marketing it at a temperature just above freezing. An article in the *American Milk Review* recently stated, "The milk industry is on the threshold of the most revolutionary change in its history." Marketing tests of this product were made in San Francisco and Los Angeles. In San Francisco, where the consumer saved three cents per quart, it was found that one-quarter of all the milk sold was in concentrated form. The results were practically the same in Los Angeles. The point of greatest significance in this new method of fluid milk handling is that concentrates can be produced in the surplus milk producing areas and shipped into deficit areas. But there are many other problems to be solved before this development can be put into national distribution.

FREEZE BAKED GOODS

Within the past few years the bakers of the country have solved the five-day-a-week labor problem by freezing bakery products in sufficient quantity during the five-day production to provide seven days of sale. Recently one manufacturer has developed a continuous freezer capable of handling a variety of baked goods at high speed. With this equipment, for example, a full week's production of whole wheat bread might be baked in one morning, and the portion not needed for immediate sale could be frozen for orders during the coming week.

Perhaps one of the most interesting of recent research projects is that of combining irradiation with refrigeration in the preservation of meat. Research on this work now goes on at Oregon State College and the University of Illinois. It is believed that a mild degree of irradiation followed by a proper refrigeration program will afford preservation without introducing the off-flavors in meat, which have previously been found in all highly irradiated meat products.

Another form of food preservation is dehydration. The item which is probably of greatest importance to restaurants at this time is the new type of dried milk solids which dissolve instantly in water. Millions of pounds of green peppers, celery and other seasoning vegetables are dehydrated

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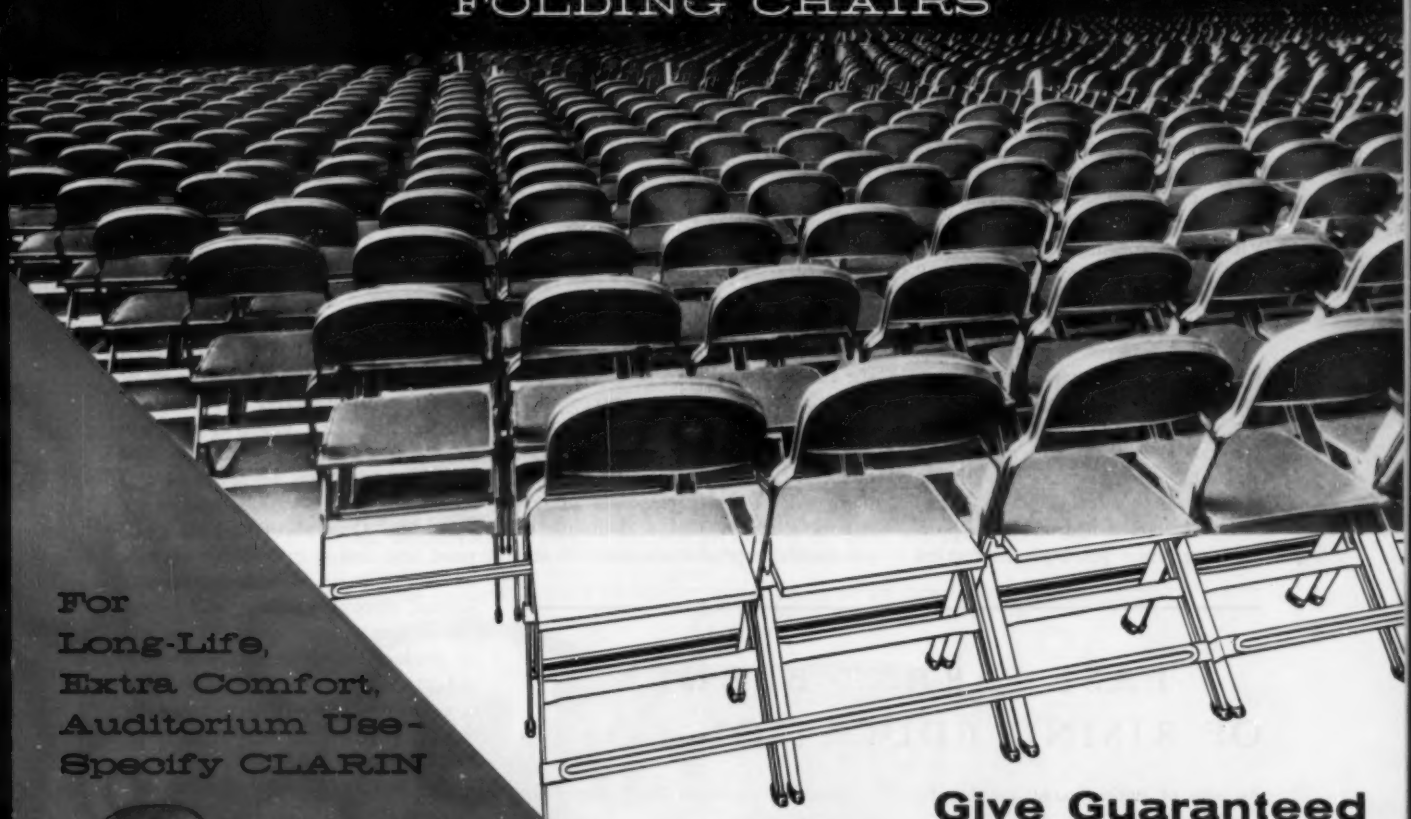

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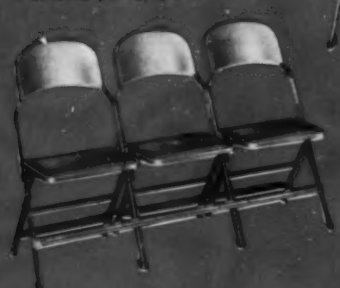

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each year for the manufacturers of dried soup mixtures and other products. Precooked dehydrated rice is sold extensively on the retail market. Many of the "ready-to-mix" cake, muffin and cookie mixes contain high quality dehydrated whole eggs or egg whites. This new type of dehydrated egg is destined to become a product of great importance to the public food service industry. Dehydrated bases for soups and gravies are becoming plentiful. Each of these dehydrated products is much better than it was at the end of World War II. Each is being worked on constantly for further improvement. Perhaps the outstanding example is the soluble coffee of today compared with that of 1945. With the continued improvement which will surely be made, soluble coffee will be the principal form in which future crops will be marketed.

Halfway between freezing and dehydration is a new type of preservation called dehydrofreezing. In this process the product is partially dehydrated and then frozen. Apples, dates and cherries are now being marketed in this form. One company soon will start dehydrofreezing peas.

During recent years, great attention has been given to chemicals in food preservation. Antioxidants are in use in animal and vegetable fats which have practically removed these products from the "perishable" food list. Citric and ascorbic acids are used in certain foods to preserve color and prevent browning. Monosodium glutamate is added to enhance flavor. Carageenen (Irish moss) is being used as a stabilizer. Papain is being used to tenderize meat and poultry. The latest addition to the list is the antibiotic aureomycin. Poultry and fish dipped in water containing this antibiotic have a substantially prolonged marketing life. Tests are now being made of the effect of other antibiotics on vegetable products. Emulsifiers, dessicants, humicants, wetting agents, colors and aromatics are in use. This particular field seems limitless.

What do all these advances in food production and processing mean to the public food service industry? They mean that most of the preparation prior to cooking food will be on a mass production basis in modern factories close to producing areas, that there will be fewer employes in restaurant kitchens, and a doubling in per-man-hour production rate with less physical effort and more pay for the needed skilled help. They mean the availability of a great variety of products, ready for immediate use, continuously uniform in quality, and protected against deterioration. These packaged foodstuffs will afford perfect inventory and portion control and remove all guesswork from menu pricing. These scientific advances provide an administrative and operational tool which will help solve the serious problem of the advancing cost of labor and move the food service industry into a position where its production efficiency will approach that of other great manufacturing industries, such as the automotive, aircraft, textile and rubber.

How about the future? What does it hold? Undoubtedly there will be great forward strides in knowledge of human nutrition, particularly in the building of sound bodies in the young and adolescent, in the elimination of deficiency diseases, and in the dietary of the aged. And much of this will be translated into plant culture and protein production. There are on this continent about 15,000 species of plant life. Only about 200 are cultivated and less than a dozen account for the bulk of current production. Science, through research, will extend this to hundreds of plants. Crops will be produced on presently barren soil, and profitable uses made of material now classified as waste. New foodstuffs, not yet visualized, will become available for human welfare.

The subject of heat transfer will come in for accelerated research. Just now we begin to see the use of microwave and infra-red cookery, and are testing the possibilities of gamma rays for food preservation. Many great developments will come from these and other spectrums in the broad field of electro-magnetic energy. Ultrasonics—high frequency sound waves—will play an important rôle in future food preservation. Chemicals, enzymes and antibiotics will constantly increase in use in all phases of food production and processing.

We are living in a revolutionary period with scientific developments rapidly changing our concept of values and our mode of life. Each of us, willingly or not, is participating in the change. Consideration and proper use of these advances definitely must be made part of the thinking of anyone who aspires to business success today or tomorrow.

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(2) **SITE INVESTIGATIONS** — to evaluate and select best available location.
(3) **PREPARATION OF REPORTS** — to fulfill all existing A. E. C. permit requirements.
(4) **TRAINING** — of several months duration to prepare personnel for the A. E. C. license examinations.
(5) **MANUFACTURE AND INSTALLATION** — of the D. A. R. T. Reactor.
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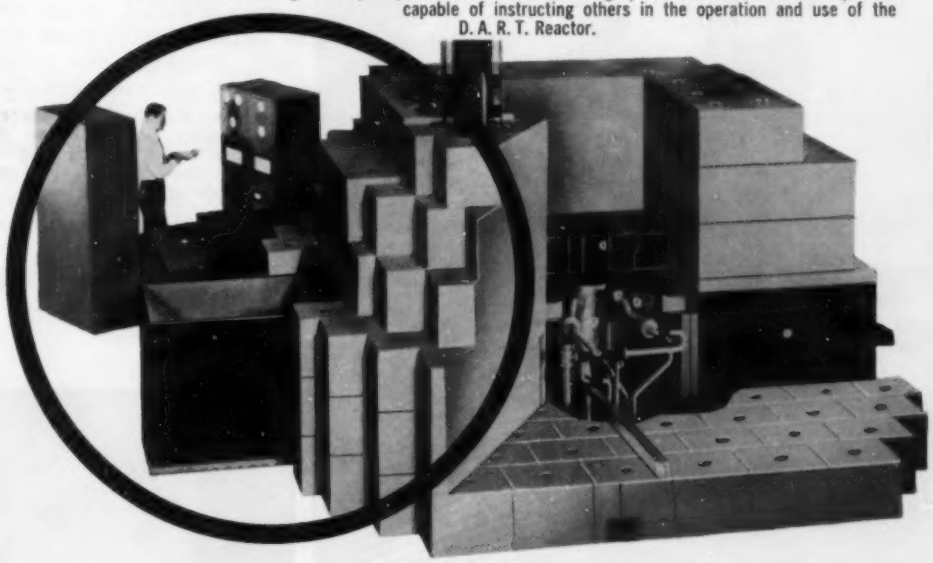
Its curriculum is designed to qualify the individual for licensing by the A. E. C. as a reactor operator capable of instructing others in the operation and use of the D. A. R. T. Reactor.



CUTAWAY OF D. A. R. T. (DAYSTROM ARGONAUT FOR RESEARCH AND TRAINING) REACTOR
This reactor is the Daystrom concept of the much publicized Argonaut, designed by personnel of the Argonne National Laboratories for specific use as a training reactor.

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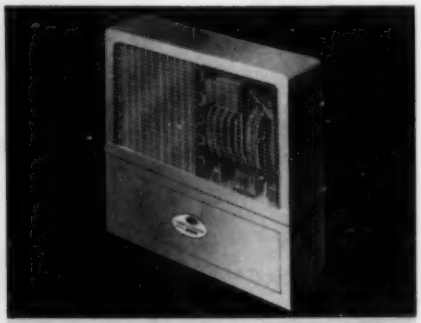

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NEWS

Vast Expansion at New York State University . . . Massachusetts May Lend Money to Students . . . Walkout in Racial Row . . . New York Votes New Tax Exemption for Collegians' Parents . . . Rioting Students Fined

President's Committee Schedules Five Regional Conferences

WASHINGTON, D.C.—Elvis J. Stahr Jr., executive director of the President's Committee on Education Beyond the High School, recently announced the dates and sites of five regional educational conferences being sponsored by the committee.

The dates and locations of the conferences follow:

Far West: San Francisco, April 10 and 11; Dr. Harold L. Enarson, director of the Western Interstate Commission on Higher Education, conference director.

South: Louisville, Ky., April 23 to 25; Dr. John E. Ivey Jr., director of the Southern Regional Education Board, chairman.

Mid-Atlantic: New York, April 30 and May 1; Dr. Carroll V. Newsom, president of New York University, chairman.

Midwest: St. Louis, May 9 and 10; Dr. B. L. Dodds, dean of the college of education, University of Illinois, chairman.

New England: Boston, May 13 and 14; Mrs. Charles Kerby-Miller, dean of Radcliffe College, chairman.

The conferences are designed to focus on the major problems of post-high school education relevant to each region, to stimulate planning and action on these problems, and to advise the President's committee of their findings.

New Tax Exemption for Collegians' Parents

ALBANY, N.Y.—The New York legislature recently gave final approval to a bill designed to bring a college education within the reach of more young people by granting parents of college students $400 more in state income tax exemption for each child over the age of 18 attending college.

The additional $400 exemption would not apply to returns on 1956 income but would become effective next year, provided the measure is signed by Gov. Harriman.

According to present regulations, taxpayers are allowed $400 credit for each child under 18, or over that age if attending school, and for other dependents. The bill passed by the New York legislature would increase the exemption for college students to $800 as far as state income taxes are concerned.

Army School Plans Opposed by Educators

WASHINGTON, D.C.—Recent proposals by the army to grant graduate degrees, such as M.A. and Ph.D., to graduates of the advanced schools of the army brought prompt opposition from educational organizations, including the American Council on Education.

The controversy broke out recently over two bills that the House armed services committee expected to give routine treatment to and send on to the consent calendar for passage without debate. One bill would allow the Army Medical Corps' Institute of Research, which operates at Walter Reed Hospital in Washington, to grant advanced degrees. The American Council on Education filed an objection and asked to be heard, and the committee agreed to a hearing.

Another bill would allow the Judge Advocate General's School at Charlottesville, Va., to grant advanced degrees in military law. Nathan M. Pusey, president of Harvard, and Deane W. Malott, president of Cornell, protested by letter, stating that such proposals "simulate the sort of degree" granted by a university.

New York State Asks $250 Million for Building Program

ALBANY, N.Y.—The State University of New York Board of Trustees recently announced details of the largest construction project in its history —a $250 million building program during the next five years.

The program would include $100 million for public institutions and $150 million for independent and church affiliated colleges.

The program is dependent on the legislature passing a proposed $250 million bond issue in the form of a constitutional amendment to "assure that if the state cannot meet the needs from current available revenues" the program would have funds to be completed. The bond issue also would have to be approved by voters of New York State in a referendum next fall.

Included in the trustees' report to the legislature, Gov. Averell Harriman and the board of regents were two projects involving new colleges for Long Island at a total cost of $27 million. Some of this money would be spent for temporarily utilizing the William R. Coe estate in Oyster Bay as a four-year teachers college specializing in science and mathematics and then converting a 340 acre site near Stony Brook, offered by Ward Melville, into a permanent site for the teachers college and another state university.

Other planned expenditures included $32½ million to establish or expand 11 community colleges and $19 million as half the cost for construction of six new community colleges in the Bronx and Long Island. Also included in the proposal is a $7,315,000 appropriation for a frozen food laboratory and other buildings at the Agricultural and Technical Institute at Farming-

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dale, L.I., as well as a $4.2 million appropriation for new buildings, including a gymnasium, at the Maritime College at Fort Schuyler in the Bronx. Another allocation provides for $22 million to be used to expand facilities at the State University Medical College in Brooklyn.

Merger Creates New University of Hartford

HARTFORD, CONN.—John G. Lee, director of research for the United Aircraft Corporation, has been named chairman of the board of regents of the newly created University of Hartford. It received a charter in early March from the state legislature.

The new university will be formed by the merger of Hillyer College, the Julius Hartt Musical Foundation, and the Hartford Art School. Regents were chosen from among board members of the merging institutions.

H. Martin Tenney, vice president of investments for the Connecticut Mutual Life Insurance Company, has been elected treasurer of the board of regents for the new institution.

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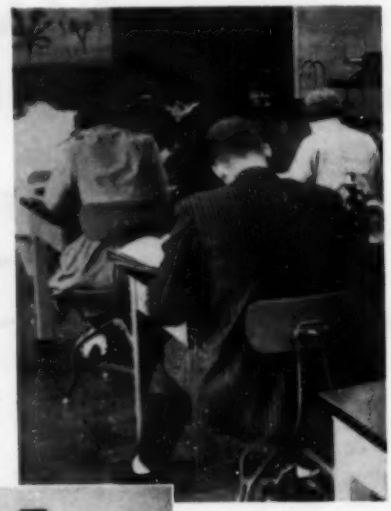

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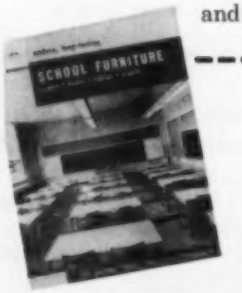

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Massachusetts Aids Students in Obtaining Funds for College

BOSTON.—As a result of recent legislation college students in Massachusetts will become eligible to invest in their own futures on easy loan terms.

Under loan guarantees that have been issued by a special corporation, banks in the state will be protected up to 80 per cent of low-rate loans to qualified students.

The 1956 session of the legislature recently passed enabling legislation making possible the establishment of the Massachusetts Higher Education Assistance Corporation as a private nonprofit organization. Donations and pledges from business and industry make available at present about $100,000 for loans. The commonwealth of Massachusetts is not involved in the loan program.

According to Elmer O. Cappers, president of the corporation, the higher education loan program in Massachusetts is the first of the type in the country. In some respects it is said to be similar to the development credit corporation plan started in Maine several years ago to lend money to small businesses ineligible for assistance through regular banking channels.

Under the proposed plan, any student who has completed a year of college work satisfactorily may borrow up to $500 for any academic year. There is a top limit of $1500 for his academic career. The student signs a note bearing interest at ½ of 1 per cent more than the "prime rate" prevailing in Boston at the time. The prime rate is that paid by the biggest borrowers with the best credit.

Under the proposed plan, the notes become due and payable six months after the date of the student's graduation, but the student may be granted an extension of the note for as much as three more years, if necessary. In that case, it is to be paid off in monthly installments.

A similar bill is before the New York State Assembly. Groups in Maine, Rhode Island, and Connecticut have also expressed their interest in similar legislation.

Students Walk Out of Negro College

ALCORN, MISS. — Alcorn Agricultural and Mechanical College, an 86 year old land-grant school for Negroes, recently was threatened with closing

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DEPT. E-3 **ST. JOSEPH, MO.**

as a result of students refusing to attend classes. The protest was in response to a series of articles in the *Jackson State Times* by Prof. Clennon King of the history department of the college. The articles were critical of the National Association for the Advancement of Colored People. Approximately 500 students walked out in the protest.

The State College Board of Mississippi investigated the situation and dismissed Dr. J. R. Otis as college president. Dr. Otis had recommended the dismissal of Mr. King because of his series of articles, but instead the board announced the dismissal of Dr. Otis, announcing no reason for the dismissal.

A spokesman for the state board stated that Prof. Clennon King, who did not plan to come back immediately, "can return anytime he wants to" to Alcorn A and M College. Mr. King refrained from comment on the statement but did indicate he would be available when the new president, Dr. J. D. Boyd, called him.

Dr. Boyd took over the presidency March 11 and soon reported that a number of students were back in class and that others seeking readmission are being given individual screening. The college had 561 students before the walkout began.

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Indiana Students Protest Proposed Tax on Cars

BLOOMINGTON, IND.—Indiana University officials urged protesting students who are opposing a plan by the local county assessor to tax their automobiles and other personal property to utilize legal solutions of their problem before carrying out a threatened boycott of Bloomington merchants.

Robert Shaffer, dean of students, stated: "A student demonstration could be interpreted as being immature and irresponsible where other legal steps are possible."

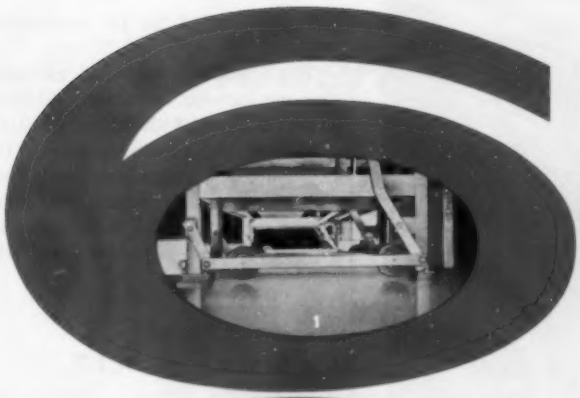
Frank Borland, county assessor, stated recently that his deputies will try to assess all student property, including automobiles and personal belongings. He said he would not assess students who can produce receipts showing they have paid taxes on their property elsewhere.

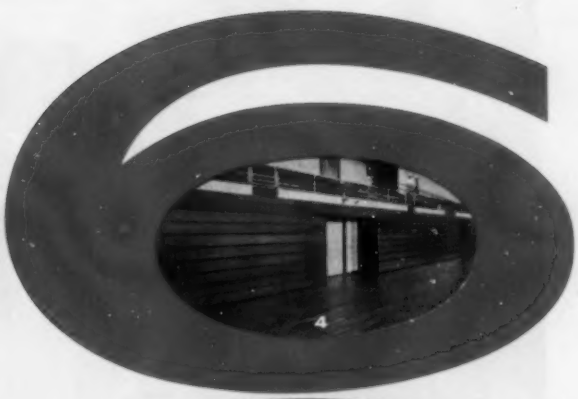
"Quite a large number" of some 5000 student automobiles on the campus are licensed and taxed in the students' home counties and will be tax exempt here, Assessor Borland stated. He reported, however, that his deputies started assessing married students' house trailers and furnishings on March 1, and he estimated the tax on them would range from $15 to less than $100. The tax rate in Bloomington this year based on last year's assessments is $7.12 per hundred dollar valuation. At this rate, Borland said, the tax on a year old car would be between $50 and $60 a year.

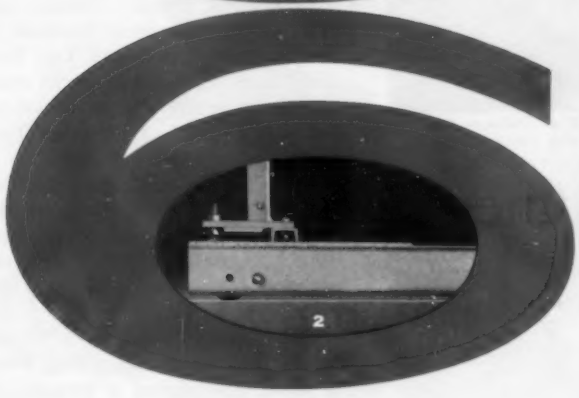
College Board Approves Tuition Increase at Four Illinois Colleges

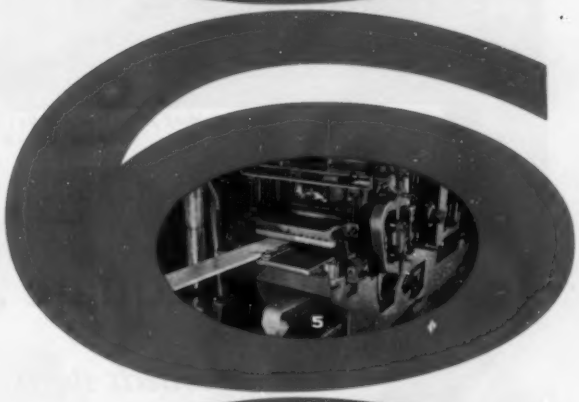
CHICAGO.—Higher tuition for four state colleges in Illinois was recently approved by the state teachers college board at a meeting in this city.

The increases, applying to Eastern Illinois State College at Charleston, Illinois State Normal University at Normal, Northern Illinois State College at DeKalb, and Western Illinois State College at Macomb, amount to $20 more for Illinois residents and $100 for out-of-state students. The new rates will be $80 for students from









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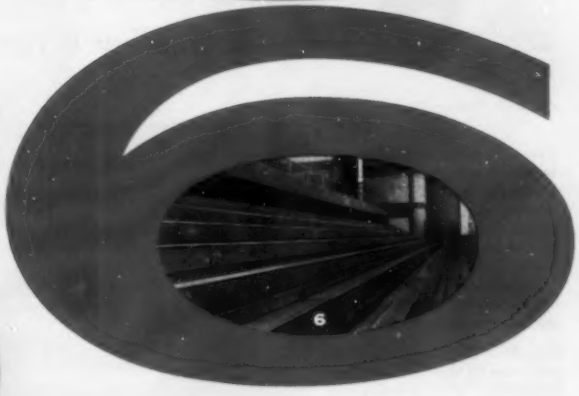

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the state and $250 for nonresident students.

The state college board estimated that the increase in tuition will bring in an additional $300,000 or $350,000 a year to the four institutions. The board acted in accordance with Gov. William Stratton's request that more of the tax burden be shifted to local sources to avoid a further state sales tax increase.

Students Fined for Rioting at M.I.T.

CAMBRIDGE, MASS. — Twenty students of Massachusetts Institute of Technology and one from Yale University were convicted in district court on charges arising out of a riot on March 3 at M.I.T. Nine other Tech students were found innocent.

According to news reports, fines ranged from $15 to $305 against the students, who were released on their personal recognizance after they appealed the decisions to the superior court.

The disturbance began in protest against food served in a dining room at M.I.T. and against a proposal to increase prices for board and room.

Before announcing his verdict, Judge M. Edward Viola said: "I fail to see how anybody who could terrorize a community should merit any consideration."

Eight policemen were injured in attempting to bring the rioting students under control.

Gift Makes Possible New Faculty Center

WALTHAM, MASS. — Officials of Brandeis University recently announced a gift of $425,000 for the construction of a new faculty center from Lawrence A. Wien of New York City and Weston, Conn.

The faculty center, being designed by the New York architectural firm of Harrison & Abramovitz, will be built of native granite and brick with large expanses of glass. The building will contain club facilities, faculty lounges, a faculty dining room, and private dining rooms for faculty-student dinner conferences.

One wing of the building will contain six apartments to house distinguished visitors and guest lecturers. Construction of the project will begin this spring in the hope that it will be completed in time for use late in 1957 or early 1958.

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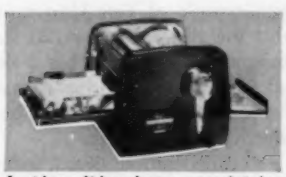
Engineering improvements on the Model 76 Mark II Conqueror include a brand-new Feed Drive Mechanism which works only in a forward motion . . . eliminates the lurch found in old-fashioned reciprocal drives. It has new High Precision Clutches and Nylon Gears that are quiet and need no lubrication, plus an 11" and 14" Cylinder Stop. The completely redesigned Motor Drive gives smoother operation, while the conveniently positioned Motor Bar permits effortless fingertip starting. Operating instructions are permanently printed on the Model 76, so anyone can operate it in a jiffy. Feature for feature . . . this Mark II Conqueror is the biggest value in spirit duplicators today!



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Williams College Uses Fund to Raise Salaries

WILLIAMSTOWN, MASS.—The largest single year faculty pay raise in the history of Williams College is being given this year, according to President James P. Baxter, "in order to hold the best teachers we have now and to attract men of similar quality in the future."

The maximum for full professors has been increased to $13,000. Effective July 1, the increases will total $100,000 for faculty salaries and an additional $50,000 in fringe benefits. These will include group life, health and accident insurance, and a change in the proportion of contributions to the pension system.

The minimum for a full professor is $8400, while an associate professor will get between $7200 and $7800. Assistant professors will draw between $5400 and $6500, while instructors' remuneration will range from $4300 to $5200.

The salary increases are coming from a fund obtained through a faculty salary endowment campaign for $2 million initiated last year. Included in this amount is the Ford Foundation grant of $849,300 and $576,000 in cash and pledges raised by the college.

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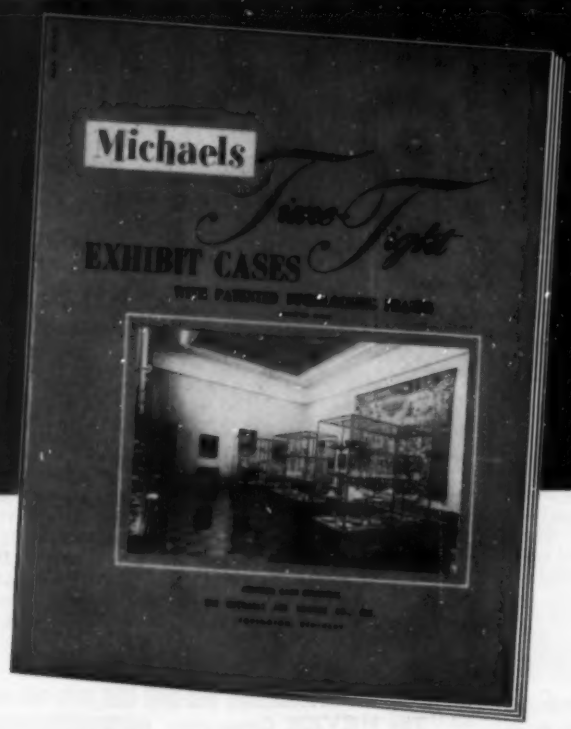

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Course in Fund Raising at Summer Workshop

UNIVERSITY PARK, PA.—A two-week workshop in fund raising will be offered by the school of education of Syracuse University at its Chautauqua Center, Chautauqua, N.Y., during the summer session from July 8 to 19.

The workshop is designed especially for those who are engaged in college and university fund raising or for college presidents and administrative officers who are responsible for the employment and supervision of fund raising personnel. The course will cover the policies and programs utilized in the development of college and university financial resources. It includes the use of technics involved in capital gifts campaigns, bequest programs, and long-term development. It is a non-credit course.

This is the eleventh year that Bernard P. Taylor, consultant in college and university fund raising, and executive director of the Penn State Foundation of Pennsylvania State University, has directed the workshop. He will be assisted by professional consultants, Dr. Lowell H. Brammer, secretary of the American City Bureau, and Paul Rydell of the R. R. Donnelley Company, both of Chicago. More than 160 colleges and universities have been represented in attendance by their presidents, fund directors, alumni secretaries, and public relations directors since the workshop was started by Mr. Taylor in 1947.

Yale Increases Annual Fee

NEW HAVEN, CONN.—President A. Whitney Griswold of Yale University stated that the all-inclusive annual fee for undergraduates at Yale has been increased $200 a year to bring it to a total of $2000. The new fees will become effective in September.

The fee covers tuition, board, lodging, and laboratory, gymnasium and health bureau charges. The tuition charge to Yale's nonresident undergraduates will be raised from $1000 to $1100 a year.

President Griswold said that the increases are necessary because of a raise in virtually all operational costs.

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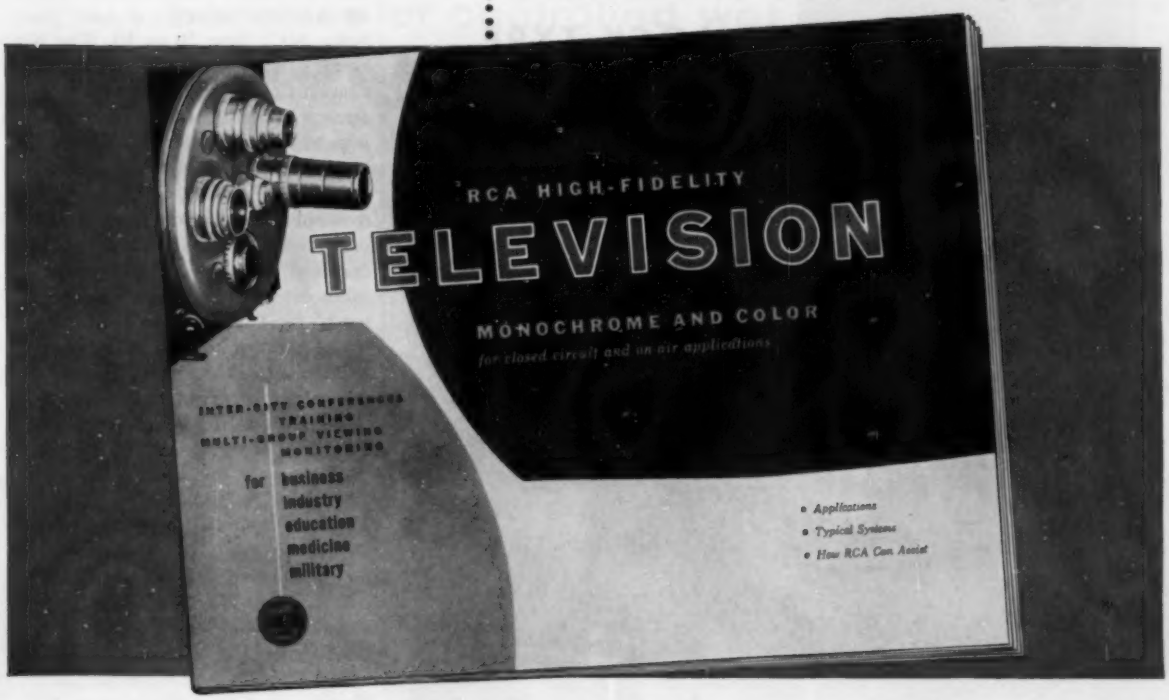

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Study Problems of Church-Related Colleges at Three-Day Meeting

NASHVILLE, TENN.—Some 500 presidents and trustees from the nation's Protestant church-related colleges are scheduled to meet at Lake Junaluska, N.C., June 28 to 30. The National Committee of Church Men for Church Colleges has initiated the conference as the first of a series of meetings to study problems facing church-related colleges.

Milburn P. Akers, Chicago, is chairman of the committee, which was organized in 1956 by two units of the National Council of Churches. A Methodist layman, he is executive editor of the Chicago *Sun-Times*.

Co-hosts for the three-day meeting will be the Division of Educational Institutions of the Methodist Board of Education and the Board of Christian Education of the Presbyterian Church. Conference co-chairmen are the Rev. Dr. John O. Gross, Nashville, and the Rev. Dr. Hunter B. Blakely, Richmond, Va. Dr. Gross is general secretary of the Methodist board's Division of Educational Institutions, and Dr. Blakely is secretary of the Division of Higher Education of the Presbyterian board.

Conference speakers will include Dr. Theodore A. Distler, Washington, D.C., executive director of the Association of American Colleges; Dr. Robert E. Wilson, Chicago, chairman of the Standard Oil Company of Indiana; the Rev. Dr. John F. Anderson Jr., Dallas, a trustee of Austin College, Sherman, Tex.; Dr. Gross, and Mr. Akers.

Delegates will participate in informal discussions on such topics as training of college trustees, financing the church college, planning trustee meetings, better public relations in church colleges, and relationships between a denomination and its colleges.

Michigan State Shares in Operating TV Station

EAST LANSING, MICH.—Michigan State University was notified on March 7 that an examiner for the Federal Communications Commission had decided that the university and Television Corp. of Michigan jointly should be granted authority to operate a television station on Channel 10, assigned to Parma-Onondaga.

The decision, which can be appealed to the full commission any time within 30 days, represents a step forward in

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the efforts of Michigan State to gain access to a very high frequency channel. It now operates WKAR-TV on Channel 60 in the ultra-high frequency range, but declares it is unable to provide adequate educational service on that channel.

Michigan State University and Television Corp. have entered into an agreement under which the time would be shared on a unique plan. Michigan State will operate as an educational station from 9:30 a.m. to 2 p.m., and from 6 p.m. to 7:30 p.m., Monday through Friday; from 10 a.m. to 2 p.m. on Saturdays, and from 12 noon to 4 p.m. on Sundays. The Television Corp. will operate during the remainder of the broadcasting day as a commercial station, using separate call letters.

The university will provide the transmitter, tower and antenna, and the Television Corp. station will use the physical facilities under a rental agreement. A transmitter building and studio facilities are to be constructed at Onondaga, but the two stations will have studios in East Lansing and Jackson as well.

NAMES IN THE NEWS

William B. Crist

William B. Crist, formerly assistant to the president of Stevens Institute of Technology, Hoboken, N.J., has been appointed director of development at Sarah Lawrence College, Bronxville, N.Y. He assumed his new duties on March 4.

Kenneth R. Erfft

Kenneth R. Erfft, formerly controller of Pennsylvania State University, has been named controller and treasurer of Rutgers University, New Brunswick, N.J., according to a recent announcement by **Lewis Webster Jones,** president of Rutgers. Mr. Erfft will succeed **Albert S. Johnson,** who died on February 21, four months before his scheduled retirement.

John R. Burgess, former chief accountant and internal auditor of the Spreckels Sugar Company in San Francisco, is now accountant in charge of the general ledger section of the controller's office at Stanford University.

Elvis J. Stahr Jr.

Elvis J. Stahr Jr., director of President Eisenhower's Committee on Education Beyond the High School, has been named vice chancellor in charge of the professional schools at the University of Pittsburgh. Mr. Stahr is currently on leave from the position of provost at the University of Kentucky. He will take over his new duties at Pitt on July 1 with the termination of his appointment as director of the President's committee.

Lloyd W. Cornell Jr., formerly director of the office of student aid at Brown University, Providence, R.I., has been appointed dean of admission and financial aid at the institution. His appointment becomes effective July 1. Mr. Cornell will succeed **Emery R. Walker;** Mr. Walker resigned to become dean of admissions at Claremont Men's College and Harvey Mudd College, two units of the Associated Colleges of Claremont, Calif.

Dr. Paul L. McKay, minister of the First Presbyterian Church of Akron,

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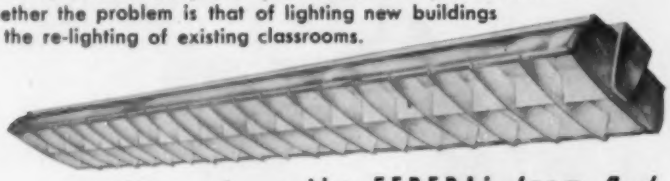

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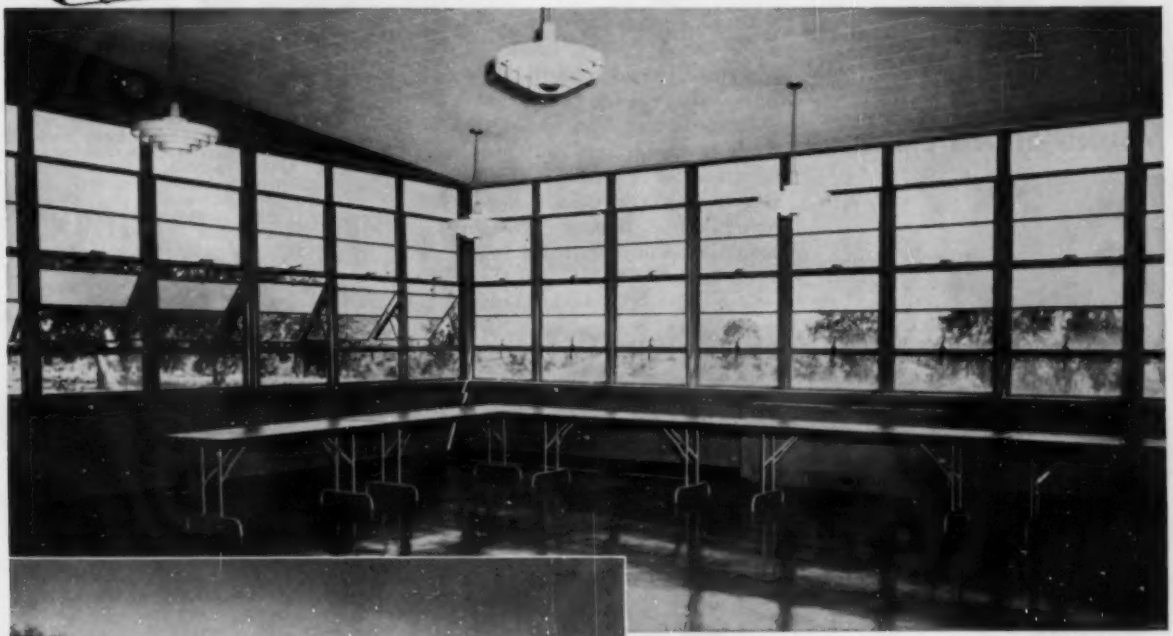

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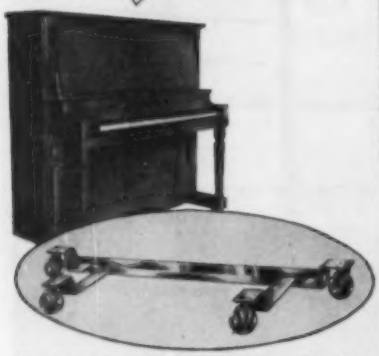

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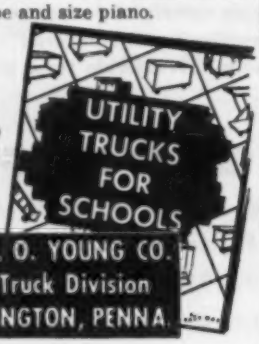

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Ohio, has been named president of Millikin University, Decatur, Ill. He will assume the presidency in June when **Dr. J. Walter Malone** retires.

Robert T. Clappier

Robert T. Clappier, member of the administrative staff of the University of Pennsylvania since July 1955, has been appointed director of Houston Hall, student activities center there. He succeeds **Louis D. Day Jr.** as head of Houston Hall, America's first collegiate student union.

Dr. Edmund J. Gleazer Jr., president of Graceland College, Lamoni, Iowa, was elected president of the American Association of Junior Colleges at the organization's annual convention held recently in Salt Lake City. Other new officers are: vice president, **Dr. Paul F. Gaiser,** president of Clark College, Vancover, Wash.; directors, **Dwight C. Baird,** president of Trinidad State College, Trinidad, Colo., and **Oscar E. Edinger,** president of Mount San Antonio College, Pomona, Calif.

George L. Meyers, formerly director of residence halls at Kansas State College, Manhattan, and at one time assistant manager of the Northern Hotel, Fort Collins, Colo., has been named director of food service at the University of Omaha. **William K. Picard,** formerly associated with a nationally known meat packing concern, is now purchasing agent at the University of Omaha.

George L. Meyers

William K. Picard

Harry Hull, formerly manager of the college union at Nebraska State Teachers College, has been appointed manager of Adams State College's union building, Alamosa, Colo.

Max H. Andrews, manager of the student union at the University of Connecticut, will become director of New York University's new Loeb Student Center on September 1.

Robert Lewis Kunes is now assistant to the president and director of development at Gettysburg College, Gettysburg, Pa.

Mark Barlow Jr., formerly assistant dean of men at Cornell University,

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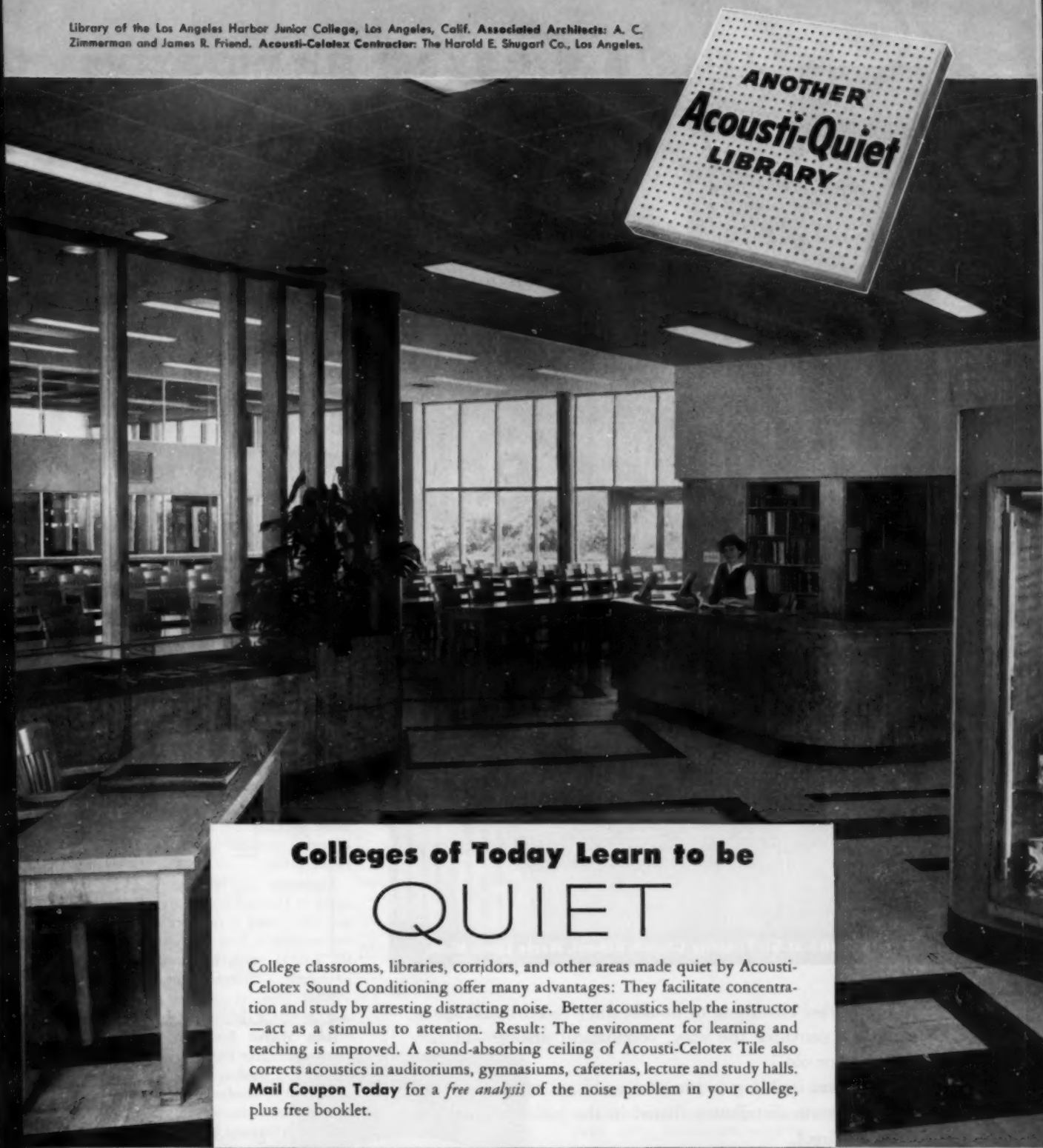
Library of the Los Angeles Harbor Junior College, Los Angeles, Calif. **Associated Architects:** A. C. Zimmerman and James R. Friend. **Acousti-Celotex Contractor:** The Harold E. Shugart Co., Los Angeles.



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Ithaca, N.Y., has been appointed dean of students at Wesleyan University, Middletown, Conn., and in June will succeed **Donald A. Eldridge,** who will leave Wesleyan to become president of Bennett Junior College, Millbrook, N.Y. **Walter H. Heideman Jr.,** who was manager of Downey House, the student union at Wesleyan, is now director of residence halls, a newly created position.

Jack T. Johnson

Jack T. Johnson, provost of Hofstra College, Hempstead, N.Y., since 1953, has been named to the newly created post of vice president of the college. The appointment will become effective July 1. Dr. Johnson will continue to have general oversight over the college and will also be responsible for nonacademic operations. He will continue to serve as the president's executive officer.

Francis H. Horn

Francis H. Horn, president of Pratt Institute, Brooklyn, N.Y., has submitted his resignation to become effective August 15. Dr. Horn became president of Pratt in August 1953, having resigned from his position as executive secretary of the Association for Higher Education of the National Education Association. At the time of the announcement of Dr. Horn's resignation, no announcement was made as to his future plans.

Lawrence L. Whaley, purchasing agent of Howard University, Washington, D.C., and a member of the administrative staff of that institution for the last 35 years, has announced his retirement, effective June 30. Mr. Whaley plans to continue in college and university consulting work.

John Wayne Richards, headmaster emeritus of Lake Forest Academy, Lake Forest, Ill., died recently at 78 years of age in Columbus, Ohio. He was headmaster of the academy from 1913 until his retirement in 1941.

Dr. Earl R. Serles, dean of the University of Illinois College of Pharmacy since July 1940, died March 13 of heart disease. He was 66 years old. Dr. Serles was president of the American Association of Pharmacy in 1938-39 and president of the American Pharmaceutical Association in 1946-47.

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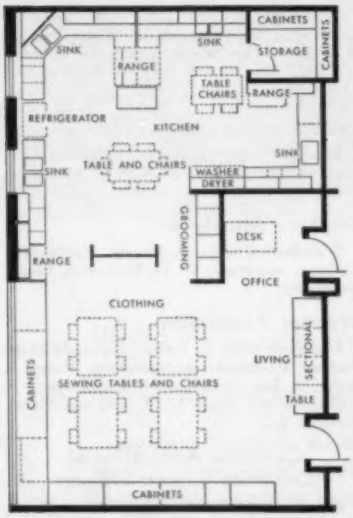

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National Federation of College and University Business Officers Associations

President: Nelson A. Wahlstrom; University of Washington; vice president: Thomas E. Blackwell, Washington University, St. Louis; secretary-treasurer: C. H. Wheeler III, University of Richmond.

College and University Personnel Association

President: James N. Ewart, California Institute of Technology; secretary-treasurer: Shelton F. King, Carnegie Institute of Technology; executive secretary: Donald E. Dickason, University of Illinois. Permanent headquarters, 809 S. Wright St., Champaign, Ill.; Kathryn Hansen, editor, C.U.P.A. Journal.

Convention: Aug. 4-7, University of Colorado, Boulder.

National Association of Educational Buyers

President: M. T. Tracht, Illinois Institute of Technology; executive secretary: Bert C. Ahrens, 1461 Franklin Ave., Garden City, N.Y.

Convention: April 30-May 3, Sheraton Gibson Hotel, Cincinnati.

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Association of College and University Housing Officers

President: Donald W. Kilbourn, Central Michigan College; secretary-treasurer: Leonard A. Schaadt, University of Michigan.
Convention: Aug. 4-7, Ypsilanti, Mich.

National Association of College Stores

President: Ray Vanderhoef, Iowa Supply Co., Iowa City, Iowa; general manager: Russell Reynolds, Box 58, 33 West College Street, Oberlin, Ohio.
Convention: April 23-27, Sherman Hotel, Chicago.

National Association of Physical Plant Administrators of Universities and Colleges

President: A. F. Gallistel, University of Wisconsin; secretary-treasurer: A. F. Gallistel, University of Wisconsin.
Convention: May 13-15, Temple University, Philadelphia.

Associations of College and University Business Officers

American Association

President: Harold K. Logan, Tuskegee Institute; secretary: B. A. Little, Southern University.
Convention: May 2-4, Hampton Institute, Hampton, Va.

Central Association

President: Roscoe Cate, University of Oklahoma; secretary-treasurer: Ralph Olmsted, Evansville College, Evansville, Ind.
Convention: March 31-April 2, Shamrock Hotel, Houston, Tex.

Eastern Association

President: John Schlegel, Lafayette College; secretary-treasurer: Kurt M. Hertzfeld, University of Rochester.

Southern Association

President: Claude M. Reaves, Huntingdon College; secretary: C. O. Emmerich, Emory University.

Western Association

President: Glen C. Turner, Colorado State College of Education; secretary: Harry E. Brakebill, San Francisco State College.
Convention: April 21-24, Empress Hotel, Victoria, B.C.

Canadian Association of University Business Officers

President: B. F. Macaulay, University of New Brunswick; secretary-treasurer: F. J. Turner, Carleton College.

American College Public Relations Association

President: Lynn Poole, Johns Hopkins University; executive secretary: W. Noel Johnson, 1785 Massachusetts Ave., Washington, D.C.
Convention: June 24-27, Hotel Fontenelle, Omaha, Neb.

Association of College Unions

President: Earl E. Harper, State University of Iowa; secretary-treasurer: Edgar A. Whiting, Cornell University; editor of publication: Porter Butts, University of Wisconsin.

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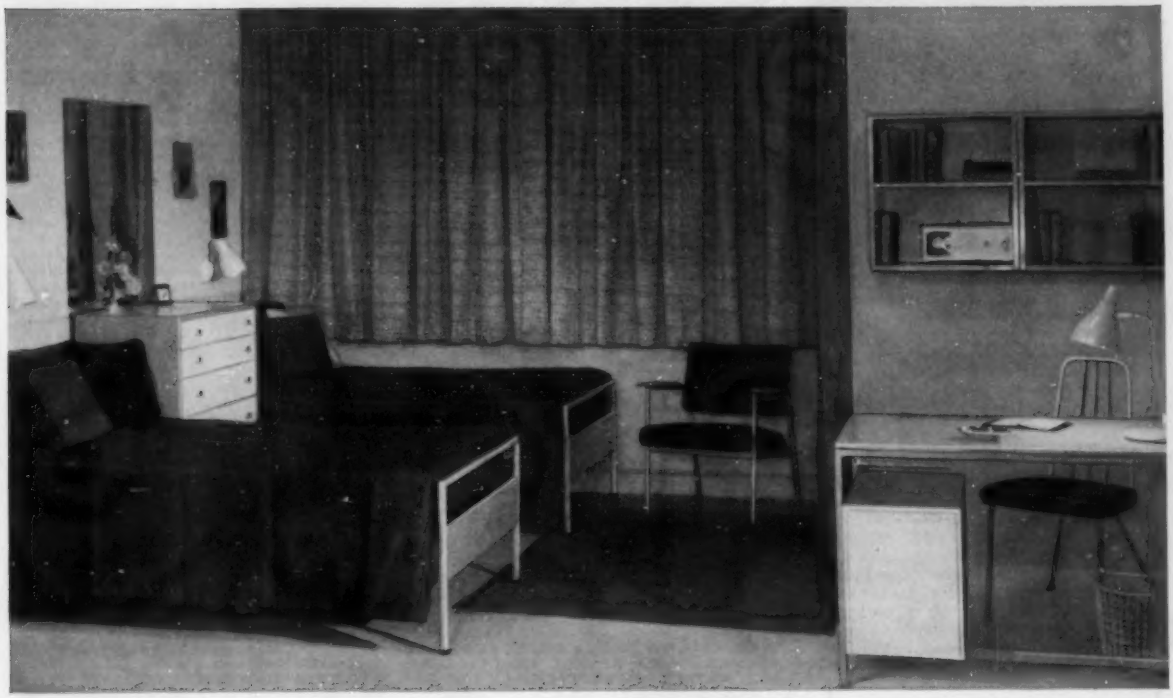

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WRRS Electric Parking Gates are so flexible, so dependable, so easy to operate they assure *absolute control* of your college or university parking lots . . . guaranteeing Reserved Parking for staff on a 24-hour-a-day basis.

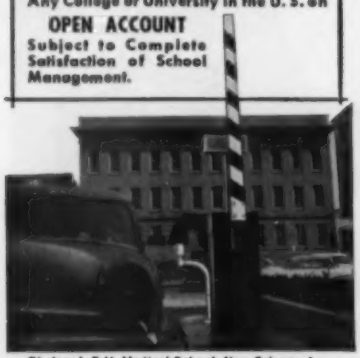
Keys, Coins or Tokens operate the gates . . . or any combination of the three. Labor costs are entirely eliminated. Initial cost is low. Installation is easy. Almost no maintenance.

Special and Exclusive Features—WRRS, builder of more than 10,000 railroad crossing gates, has engineered into the gates such features as the "Lot Full" sign, the magnetic detector, double key controls for day and night parkers, pushbutton remote controls, automatic counters and others. This enables WRRS to make this offer:

WRRS Parking Gates Will Be Shipped to Any College or University in the U. S. on

OPEN ACCOUNT

Subject to Complete Satisfaction of School Management.



Photos: L.S.U. Medical School, New Orleans, La.

WRITE TODAY

For descriptive folder detailing information on the various parking lot control plans available, or

SEND US

A brief description of your lot including dimensions, preferred locations for entrances and exits and a general idea of how you want to control parking. You will receive, without obligation, a parking plan and cost estimate. 6394

WESTERN RAILROAD SUPPLY COMPANY

General Offices and Factory

2416 South Ashland Ave., Chicago 8, Ill.

IN CANADA: Canarex, Grant Inc., 465 St. John St., Montreal 1, Quebec

classified advertising

POSITIONS WANTED

Assistant to President—With 10 years in industrial sales, advertising, office management, wants administrative position; experienced on special projects. Write Box CW 335, COLLEGE AND UNIVERSITY BUSINESS.

Bookstore Manager-Purchasing Agent—45 years old, college graduate, several years experience; also experience with university printing and public relations department. Write CW 311 COLLEGE AND UNIVERSITY BUSINESS.

Business Officer—Ten years business manager small liberal arts college; all aspects business management; accounting, maintenance, purchasing, auxiliaries, financial statements; desire change for professional advancement. Write Box CW 337, COLLEGE AND UNIVERSITY BUSINESS.

Controller — Business Manager — Treasurer — Successful college treasurer and business manager fourteen years, college teaching in business administration five years, experienced in accounting, budget preparation and control, financial reporting, purchasing and plant maintenance; have understanding and imagination; presently employed in college; desires change. Write Box CW 314, COLLEGE AND UNIVERSITY BUSINESS.

Director of Residence Halls—Experienced in college dormitory management, organization, purchasing, maintenance (all aspects), budgeting; B.S. degree; excellent references. Write Box CW 340, COLLEGE AND UNIVERSITY BUSINESS.

Engineer—Experienced in electrical construction, maintenance, design of power and lighting systems, theatre lighting, desires position in physical plant administration of college or university. Write Box CW 323 COLLEGE AND UNIVERSITY BUSINESS.

Food Service Director—Successful administrator with diversified experience in large volume commercial and institutional operations; understand budget control, food and labor costs, purchasing and operating at management level. Write Box CW 317, COLLEGE AND UNIVERSITY BUSINESS.

Purchasing Agent—Administrator desires position purchasing for school or university; 23 years service in purchasing field with industrial background. Write Box CW 339, COLLEGE AND UNIVERSITY BUSINESS.

Responsible Business Office Position—Preferably university; middle Atlantic states; university accounting degree; eight years experience all phases business office operations; including auxiliaries; maintenance; salary $7000. Write Box CW 341, COLLEGE AND UNIVERSITY BUSINESS.

Superintendent of Buildings and Grounds—Engineering and legally trained; twelve years experience as superintendent of buildings and grounds at one of nation's outstanding colleges; experienced in budget preparation, purchasing, personnel management and all phases of plant maintenance; complete resume upon request. Write Box CW 336, COLLEGE AND UNIVERSITY BUSINESS.

Superintendent of Buildings and Grounds—Small college, desires change and professional advancement, prefers midwest location; over nine years experience maintenance, construction, purchasing, budget planning, and supervision. Write Box CW 338, COLLEGE AND UNIVERSITY BUSINESS.

POSITIONS OPEN

Accountant-Bursar—Attractive position open for man or woman who can qualify; small eastern college. Write Box CO 223, COLLEGE AND UNIVERSITY BUSINESS.

Assistant Director of Dining Halls—Large midwest university; we are expanding our feeding facilities and have immediate opening for man in his 40's whose training and experience qualify him to take over managerial duties in future; good salary; send photo and full details to Box CO 220, COLLEGE AND UNIVERSITY BUSINESS.

Dietitian—Co-educational university contract, service for 800; excellent kitchen and dining facilities; some experience in catering supervision desirable. Send complete statement of training and experience to Catherine Harpster, Director of Food Service, DRAKE UNIVERSITY, Des Moines 11, Iowa. Position open June 1, 1957.

Food Service Directors—Rapid growth of the leading quality minded college food service catering company creates a need for successful, young, male college or university food service directors; highest initial remuneration, plus rapid advancement in return for long hours of loyal work; character and personality traits more important than length of experience; relocate with consideration given to preference. Send resumé to Box CO 211, COLLEGE AND UNIVERSITY BUSINESS.

Property Manager and Purchasing Agent—Promotion to business manager in near future; rapidly expanding plant and student body; four major buildings planned in next three years; applicant needs working knowledge and some experience in accounting. F. B. Reynolds, JACKSONVILLE UNIVERSITY, Jacksonville 11, Florida.

Superintendent of Buildings and Grounds—Medium size, midwestern private university has opening for experienced man to direct maintenance and custodial staff in the operation of a growing physical plant; includes responsibility for custodial, heating plant, grounds, repair and maintenance of buildings; send late photo and complete details concerning age, education, experience, etc. Write Box CO 222, COLLEGE AND UNIVERSITY BUSINESS.

University Bursar—Young man, college graduate, to assume full responsibility of 12,000 student accounts, control of cash receipts, and direction of staff of ten or more persons; salary open. Send complete information, salary requirement, and recent photo to R. D. Strathmeyer, Ass't Vice Chancellor for Business Affairs, UNIVERSITY OF BUFFALO, Buffalo 14, New York.

The rates for classified advertisements are: 20 cents a word; minimum charge, $4. (No charge for "key" number.)

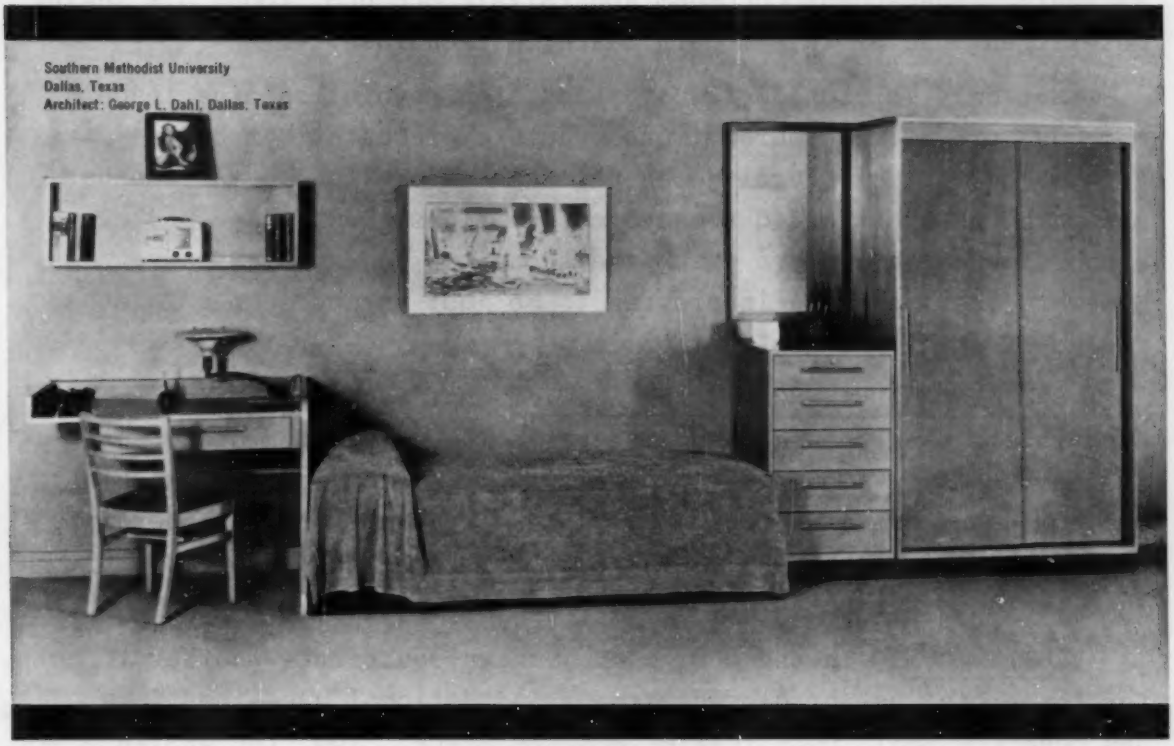
Forms close 25th of month preceding date of issue.

COLLEGE AND UNIVERSITY BUSINESS

919 N. Michigan Avenue, Chicago 11, Ill.

HUNTINGTON PRE-BUILT UNITS

"made better to look better and last longer"



A complete job

from suggested layouts to installation can be handled by Huntington. Our extensive furniture manufacturing experience is your guarantee of a quality product tailored to suit your particular need.

Installation

handled by our own trained personnel. In order to provide comprehensive service and give you positive satisfaction, Huntington includes proper installation in the pre-built unit program.

Complete specifications

and detail drawings, based on recommendations by leading architects and covering every aspect of materials and assembly are available. The use of Huntington specifications insures you of an excellent job throughout.

Harmonious unified effects

are achieved by using Huntington pre-built units with one or more of Huntington's many standard room patterns. By matching finishes and styles, you can obtain that distinctive look of coordinated harmony.

HUNTINGTON FURNITURE

Designed for today

AND tomorrow—

Please mail complete information about Huntington furniture to:

Company _____

City _____

Attach to your letterhead and mail to:
Huntington Chair Corporation, Huntington, W. Va.

CUB
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(advertisement)

An Open Letter To School Executives

CLOSED CIRCUIT (or CLASSROOM) TELEVISION has advanced well beyond the experimental stage.

Large UNIVERSITIES—with enrollments in the thousands—as well as small, independent COLLEGES and PRIVATE SCHOOLS, today are making intelligent use of this modern teaching technique.

Not only is closed circuit television revolutionizing teaching methods, providing clearer, more accurate presentations before large groups, but it is recognized as a possible solution to the teacher shortage and overcrowded classroom conditions. Dental and Medical schools, especially, are using the technique to excellent advantage. However, the technique is proving to be just as applicable in other fields of study and instruction.

BUT, ISN'T CLASSROOM TV EXPENSIVE? No. Sarkes Tarzian, Inc., electronics manufacturer and pioneer in the television broadcast industry, offers a complete closed circuit system for approximately $20,000. An adequate—but less comprehensive system—engineered to your own specific needs—is available for as little as $6,000. This includes ALL basic equipment.

LOW IN COST—In the design of Tarzian equipment—whether it be for commercial use or closed circuit, educational use—the theme has been LOW COST, both initial and operating. Too, the design stresses simplicity of operation, with no sacrifice in quality of materials, construction, or performance.

Some schools today are using our closed circuit television equipment for training students in commercial television. A few schools have outlets for their programs through local, commercial stations. But, for the most part, their programs are never aired. Addition of a low power transmitter—operating on one of the unused channels—could provide trainees more complete training, and at the same time, enable the public to benefit from the wealth of enlightenment which can be brought before the camera from the faculty...libraries...museums, and the like.

May we submit a proposal on low cost television to meet your requirements? Or, write for "Education By Television."

SARKES TARZIAN, Inc.
Classroom TV Division
Bloomington, Indiana

WHAT'S NEW

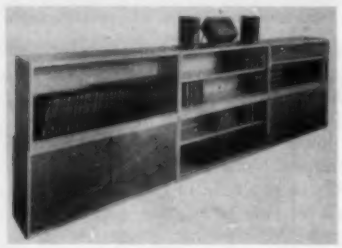
April 1957

Edited by Bessie Covert

TO HELP you get more information quickly on the new products described in this section, we have provided the postage paid card opposite page 108. Circle the key numbers on the card which correspond with the numbers at the close of each description item in which you are interested. COLLEGE and UNIVERSITY BUSINESS will send your requests to the manufacturers. If you wish other product information, just write us and we shall make every effort to supply it.

Storage Cabinets Have Multiple Use

Originally designed as matching equipment for Amervent and HerNel-Cool



heating, ventilating and cooling units, the new Herman Nelson Storage Cabinets solve a variety of storage needs. They are practical in offices, libraries, work rooms and boiler rooms as well as in the classroom for storage of numerous items.

The cabinets may be installed singly or nested together and are available in 24, 35 and 48 inch lengths. **American Air Filter Co., Inc., Herman Nelson Ventilator Products, 215 Central Ave., Louisville 8, Ky.**

For more details circle #725 on mailing card.

Muffin Mix in Institutional Size

Gumpert has introduced a new muffin mix in one pound packages and 50 pound drums for institutional use. Named the Sally Lunn Muffin Mix, the preparation makes a semi-sweet, light tea-cake type muffin. Sally Lunn muffins are easy to make, quick-baking and can always be served hot by mixing batches as needed or by placing already-baked muffins in bun warmers or drawers. **S. Gumpert Co., 812 Jersey Ave., Jersey City, 2, N. J.**

For more details circle #726 on mailing card.

Electric Incubators for Laboratory Procedures

A temperature range from 37 to 110 degrees C. is offered in the new line of all-metal, electrically heated Cenco Incubators. Designed for a wide variety of laboratory applications, the incubators feature high precision, convenience of operation and safety. A tempered plate glass inner door, equipped with a latch, permits observation of activity without loss of heat. Rapid, constant heating is provided by nickel-chrome strip-type heating elements mounted between the inner and outer walls.

The incubators have high grade steel outer walls with three inches of glass wool composition insulation. They come in two sizes: No. 46005 with three shelves and a total area of 376 square inches; and No. 46015 with four shelves and a total area of 920 square inches. **Central Scientific Co., 1700 Irving Park Rd., Chicago 13.**

For more details circle #727 on mailing card.

Luminous Ceiling in Complete Package

The new Wakefield Magic Ceiling is a completely packaged luminous ceiling designed to provide high quality lighting in classrooms, offices and other areas where quick and economical installation is required. The package consists of elec-

trical channels for fluorescent lamps, and steel grids which carry the Wakon-vinyl plastic diffusers.

Standard sizes range from 6 by 8 to 24 by 28 feet. Diffusers do not touch the side walls and may be installed almost wall-to-wall or within two feet of ends or sides of a room. The eleven standard sizes fit almost any room, as small as 8 by 10 or as large as 28 by 32 feet. Minimum number of 40W RS lamps is ten, maximum is 49. Information on the Magic Ceiling is available from any local Graybar representative and it is manufactured by **The Wakefield Co., Vermilion, Ohio.**

For more details circle #728 on mailing card.

Cabinet Fan for Crowded Buildings

A compact, silent-operating Cabinet Fan has been developed for crowded and low-ceilinged institutional buildings. The fan requires minimum installation space and can be located over doorways, in closets and other out-of-the-way spaces. It serves air moving systems for introduction of fresh ventilation air, for exhausting purposes and recirculation of interior air. One and two-fan models are available in 12 sizes. **The Trane Co., La Crosse, Wis.**

For more details circle #729 on mailing card.

Adding Machine Is Redesigned

The new Burroughs model Ten Key Adding Machine incorporates a newly designed keyboard, greater operating simplicity, two-color ribbon, automatic spacing for tear off after totals, and a new high operating speed.

The new "Balance Touch" Keyboard with slightly larger keys combines proper key positioning with balanced key feel so all control keys have the same even touch. The machine is housed in an aluminum case offered in four colors: Capri Coral, Alpine Blue, Amber Gray and Sea Mist Green. **Burroughs Corp., 6071 Second Ave., Detroit 32, Mich.**

For more details circle #730 on mailing card.

Microfilm Camera Films Both Sides Simultaneously

The new Remington Film-a-Record Model 11 duplex microfilm camera photographs both sides of a document at the same time at any of three reduction ratios. No special training is required to operate the unit as full operating controls, warning buzzer and indicator lights assure error-free microfilming. A single Colorstat control adjusts light intensity for proper recording of various types and

colors of documents. The Film-a-Record holds 250 feet of 16 mm film which can be loaded in daylight. **Remington Rand, 315 Fourth Ave., New York 10.**

For more details circle #731 on mailing card.

(Continued on page 88)

What's New . . .

Library Furniture for Institutional Use

Standard Wood Products has introduced the new Donnell line of library

furniture for heavy duty use in college libraries and other institutions. The line is constructed of naturally finished wood which is functional and attractive.

Pieces in the line include charging desk units, card catalog files, library shelving, tables and chairs and miscellaneous units such as stools, stands and racks. Each piece is offered in various models to meet the requirements of any institutional need. **Standard Wood Products Corp., Library Div., 47 W. 63rd St., New York 23.**

For more details circle #732 on mailing card.

Indoor-Outdoor Sweeper Facilitates Maintenance

Corridors, classrooms, auditoriums, grounds, playing fields, stadiums and other areas can be kept clean with minimum time and effort with the new MHD power sweepers. The MHD-36 has a 36-inch brush swath and will sweep up to 80,000 square feet in an hour. The MHD-48 has a 48-inch brush swath and will clean 100,000 square feet in an hour. A 12-inch side brush on the sweepers cleans along walls and curbings, completing the sweeping job in one operation.

The new Modern Power Sweeper models are easily handled and can be maneuvered easily around classroom or auditorium equipment indoors and between trees, shrubs and athletic equipment outdoors. The machines pick up

fine dust particles as well as bulky debris, including leaves, grass cuttings and brush. They are ruggedly constructed with all-steel bodies and a heavy protective grill for long service. The driving mechanism requires minimum maintenance. **Modern Power Sweeper Co., 738 N. McKeever Ave., Azusa, Calif.**

For more details circle #733 on mailing card.

Automatic Switchboard for Limited Needs

Educational institutions requiring only three to ten private telephones will be interested in the new Model 1B10 Dial Telephone Switchboard. The completely equipped unit provides top quality intercommunication service and requires only the addition of the telephones to be placed in operation. It will provide normal intercommunication as well as special features, such as paging, code number, speaker phone and other services. **Telecom Inc., 1019 Admiral Blvd., Kansas City 6, Mo.**

For more details circle #734 on mailing card.

Wide Screen in Portable Tripod Style

The new Cinemaster is a portable tripod projection screen offering a picture

area two and one-half times as wide as it is high. It measures a full 40 by 100 inches, yet can be handled by one man. The fine grain Hy-Flect glass beaded fabric of the screen is kept taut and wrinkle-free in the sturdy metal case by a combination of a special roller lock and the Cinemaster functional tensioning lever. A convenient carrying handle facilitates handling. **Radiant Mfg. Corp., 2627 W. Roosevelt Rd., Chicago 8.**

For more details circle #735 on mailing card.

Electronic Air Cleaner Takes Less Space

The Trion Hev electronic air cleaner accommodates higher air velocities for greater cleaning efficiency, yet matches more closely the face area of the heating and cooling coils for reduced space. The unit specified for 90 per cent efficiency is reduced ⅓ in size while the 95 per cent efficient unit is ¾ the size of a standard 90 per cent unit. All Hev units are equipped with a motorized moving washer and adhesive applicator for automatic maintenance. **Trion, Inc., 1000 Island Ave., McKees Rocks, Pa.**

For more details circle #736 on mailing card.

(Continued on page 90)

Reach-In Refrigerator With Mobile Food File

The new Koch Series "M" line of reach-in refrigerators with completely ad-

justable, removable and interchangeable interiors, features a mobile food file. This unit is completely self-contained in a frame and equipped to slide in and out of lower doors to a special cart for transportation. The food file may be loaded with 18 by 26 or 14 by 18 inch trays for bulk or one at a time handling. The Series "M" also has a pan file for economical storage of standard size pans.

The series is available in one, two, three or four section widths, front opening or pass through, with solid or glass doors, self-contained or remote, porcelain or stainless steel, for medium or frozen storage and in 26 or 34 inch depths. Pedestal legs allow easy under-cabinet cleaning. **Koch Refrigerators, Inc., 401 Funston Rd., Kansas City 15, Kansas.**

For more details circle #737 on mailing card.

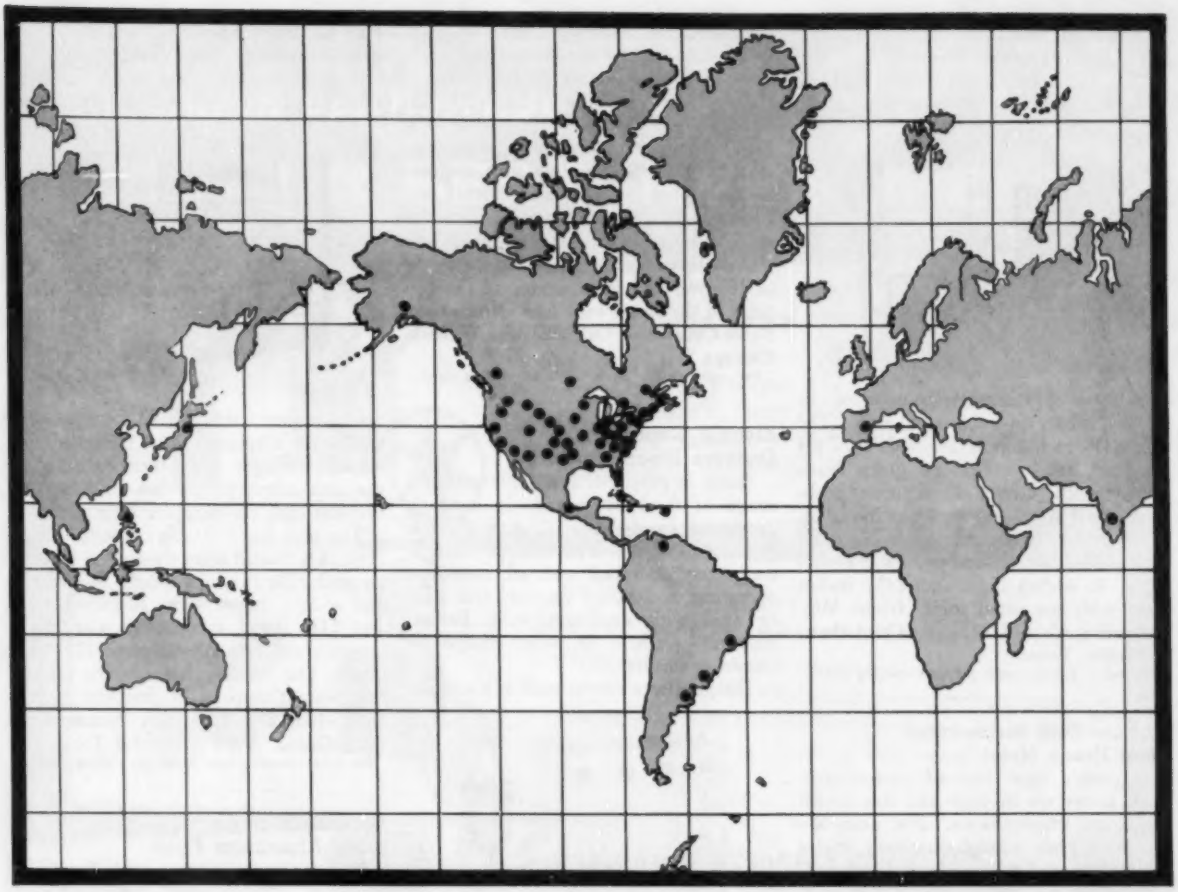
Face and Hand Dryer Serves Two People

Each unit in the new Federal Industrial Series D line of electric hand and face dryers is able to serve two people simultaneously, making the line ideal for heavy traffic locations. A unique construction feature delivers an efficient air flow through a pair of louvered grills for drying hands and face in one operation.

Model DB-200, illustrated, is constructed of an easily removable cast aluminum one-piece cover which is available in a choice of colors and white.

The unit is guaranteed vandalproof by the manufacturer, according to the report. **Federal Industrial Mfg. Co., 3109 Forbes St., Pittsburgh 13, Pa.**

For more details circle #738 on mailing card.



RIC-WIL offers WORLD WIDE

Service for Prefabricated Piping Systems

Over 75 field offices, both national and international are at your disposal on any project dealing with prefabricated piping systems. These field representatives offer on the spot assistance in planning, delivering and installing underground or overhead piping. A Ric-wil representative will be glad to discuss plans involving steam, hot water or oil distribution lines . . . and he represents the world's largest supplier of prefabricated piping systems.

For the name of your nearest representative or the catalog covering the Ric-wil line, call or write the home office.

Quality Piping Systems . . .
. . . of Exceptionally High Thermal Efficiency
SINCE 1910

RIC-WIL INCORPORATED — PREFABRICATED INSULATED PIPING SYSTEMS

BARBERTON, OHIO

IN CANADA: THE RIC-WIL COMPANY OF CANADA LIMITED

What's New . . .

Individual Desk for All Classroom Needs

The new Model 1000 Individual Desk is designed to fill all classroom needs.

The base is ruggedly constructed of welded tubing in an integral unit. The 18 by 30 inch top is available in 7-ply plywood, birch plastic or green linen plastic finish. Glides are of rubber cushioned, case hardened steel and the desk is adaptable in height from 21 to 30 inches. The steel book box is 9⅜ inches wide, 16 inches high and 14⅞ inches deep with one small shelf. **Globe Mfg. & Seating Co., 1722 N. E. Third Ave., Amarillo, Texas.**

For more details circle #739 on mailing card.

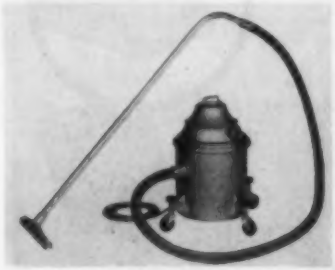
Custom-Built Incinerators Meet Every Need

Winnen's new line of custom-built incinerators are built to any size to fill individual requirements. The units are built to pass smoke-abatement codes everywhere and will withstand temperatures exceeding 2500 degrees F. Optional equipment includes automatic firing control, pre-fab chimneys, overfire burners and electronic controls. There is a choice of door types. **Winnen Incinerator Co., 932 Broadway, Bedford 32, Ohio.**

For more details circle #740 on mailing card.

"Turbo-Vac" Cleaner for All Maintenance Jobs

The new Kent "Turbo-Vac" vacuum cleaner is designed to maintain rugs, carpets, walls, wet and dry floors and even boiler cleanout at low cost. Model 45, featuring high volume air intake for fast cleaning, has a capacity of ⅔ bushel or five gallons. The unit rolls easily in



any direction on four ball-bearing swivel casters and incorporates all Kent construction advantages. **The Kent Co., Inc., 736 Canal St., Rome, N.Y.**

For more details circle #741 on mailing card.

Gymnasium Seating Unit Is Mobile and Free-Standing

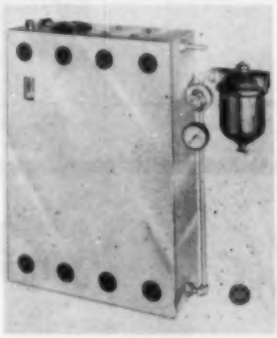
To fill the need for flexible arrangements in gymnasiums, Brunswick has added a new free-standing, mobile seating unit to its line of folding gymnasium seating. The free-standing unit requires no floor plates or wall attachments and is moved by means of mobile trucks to where additional seating is required. The unit is furnished to a maximum height of 10 rows and incorporates all the features of the Brunswick line. **Brunswick-Balke-Collender Co., 623 S. Wabash, Chicago 5.**

For more details circle #742 on mailing card.

Electric Generator Delivers Steam Instantly

Steam at pressures adjustable within a range of 0 to 50 pounds is instantly generated in the new Climax Electric Steam Generator. The compact unit is completely equipped with all automatic operating and safety controls and may be used with sterilizers, stills, kettles, steamers, washers or other equipment requiring steam.

The generator can be used as a standby



unit for a small institution when the boiler plant is shut down for steam, or as an emergency unit. During hot weather the steam plant can be shut down and electric steam generators used for all steam requirements. Model A, developing 10 to 18 KW, is only 15 by 23 by 6 inches in size while Model B, developing 5 to 8 KW, is 13 by 15 by 6 inches in size. The units operate by plugging into 220 volt, 3-wire single phase current. **The Hospital Supply Co., Inc., 114 E. 25th St., New York 10.**

For more details circle #743 on mailing card.

Two Desserts Added to Food Line

A new gelatine and a new pudding dessert have been added to the Seidel line of institutional foods. Crab-Apple Gelatine Dessert adds taste variety and eye appeal with its blush-pink color. Chocolate Mint pudding combines the flavor of milk chocolate with a touch of refreshing mint. **Ad. Seidel & Son, Inc., 1245 W. Dickens Ave., Chicago 14.**

For more details circle #744 on mailing card.

(Continued on page 92)

Hot Canned Food from Counter-Type Vendor

A new machine which vends 10 selections of hot canned food can be placed

on a counter, table or mounted on the wall with a special rack. Designed for schools, colleges and other institutions, the unit offers piping hot food in the original can, yet occupies little space.

The unit has a 50 can capacity which is quickly loaded from the top by a gravity feed. The machine weighs 96 pounds and is 26½ inches wide, 20 inches high and 11½ deep. It operates with push button control on any standard 110 A.C. outlet. The vendor, designed for Campbell Soup Company, is finished in red and white baked enamel. **Fedam Co., 7922 Grand Ave., Elmwood Park, Ill.**

For more details circle #745 on mailing card.

Acoustical Units Have Aluminum Face

Hansotex is a new acoustical ceiling treatment with aluminum face and preselected sound absorbing element. It is low in cost, incombustible, has high acoustical value and is decorative. The pre-selected sound absorbing element is permanently bonded to the aluminum and the embossed pattern of the face has openings slanted in depth. The flat aluminum surface is finished in glare-free baked enamel for easy maintenance.

Installation is inexpensive, as the two by two foot units are simply placed on exposed Tee-runners or Zee-runners. They are removable for easy access to the plenum. They can be adjusted any time after installation to fit changing layouts and modified utilities and will accommodate to most types of lighting,

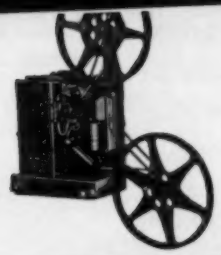
air conditioning and partitioning. Hansotex is moisture, rot, fungus, mildew and termite-proof, according to the report. **Elof Hansson, Inc., Acoustical Div., 711 Third Ave., New York 17.**

For more details circle #746 on mailing card.

RCA SOUND PROJECTORS . . .

YOUR BEST INVESTMENT

1



RCA 400 JUNIOR 16MM PROJECTOR

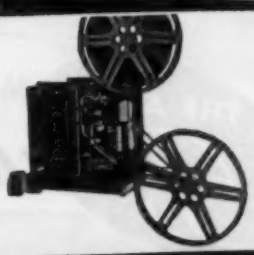
Educational films are seen at their best in the classroom on this easy-to-use 400 Junior. It's lightweight, dependable, easy to operate. Speaker is mounted in detachable cover of this one-case unit. Teachers love its simplicity!

2

RCA 400 SENIOR 16MM PROJECTOR

For that heavy duty use in classroom or medium sized auditorium, this RCA 400 Senior gives top-flight performance—years of trouble free operation. It's completely portable as a two-case, or single-case unit.

3



RCA MAGNETIC RECORDER PROJECTOR

Teachers can easily record their own teaching commentary on films—playback immediately. Recording is similar to a tape recorder, and just as easy to do! And, of course, you can show standard films also, sound or silent.

4

RCA PORTO-ARC PROJECTOR

Ideal for the large auditorium, or any other situation where more light is needed on the screen than can be obtained from standard projectors. It's portable, too—the five cases are easily assembled. Operation is just as simple as any of above projectors.

All RCA projectors have those features the teacher wants: ease of threading the film, simplicity of operation, brilliant light, and clear lifelike sound. They are ruggedly engineered and constructed for long life, giving you a low cost per year. For specific details, mail the coupon—now!

EDUCATIONAL SERVICES

RADIO CORPORATION of AMERICA

CAMDEN, N. J.

EDUCATIONAL SERVICES, Dept. R-12
Radio Corporation of America
Camden, N.J.
Please send me the story on RCA's 16mm Sound Film Projectors.

Name_____ Title_____

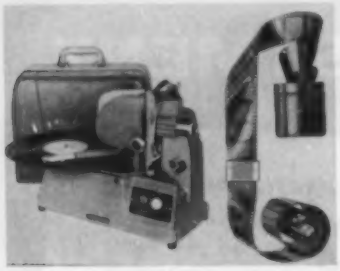
School_____

Street_____

City_____ State_____

Film Feed Mechanism Eliminates Rewinding

Two features said to eliminate the time spent for rewinding and handling film-



strips are incorporated into the DuKane automatic sound slide-film projector. An "inside-out" film feed mechanism feeds film into the projector from the inside of a roll of film. This system eliminates the need for rewinding filmstrips. A mechanical take-up mechanism winds the projected film for insertion into the container ready for the next showing.

Two other new construction features include a new type of forced air cooling which reduces heat of the film approximately 30 per cent, and a new mechanism which prevents scratching and other wear as the film passes through the aperture plates. **DuKane Corp., Audio-Visual Div., St. Charles, Ill.**

For more details circle #747 on mailing card.

Folding Door Fabric Is Long Wearing

A new fabric has been developed for the Holcomb & Hoke Foldoor Folding Door. Known as Luxury Fabric, the new material has a nubby-tweed texture. It has a fiber glass backing which will not stretch or shrink, for continuing good appearance of the door. Fiber glass is also fire resistant, making the fabric practical for institutional use. Luxury fabric is available in ten soft shades. **Holcomb & Hoke Mfg. Co., Inc., 1545 Van Buren St., Indianapolis, Ind.**

For more details circle #748 on mailing card.

Steam Boilers Are Fully Automatic

Two new high pressure steam boilers have been introduced by Cyclotherm. The new units, with capacities of 50 and 60 h.p. respectively, are fully automatic for unattended operation. The boilers, with only 98 square feet of heating surface, burn No. 4 oil, light oil, gas or a combination oil and gas. All boiler trim, as well as burner, outlets, motors and other parts are furnished and only five connections are necessary for installation. The boilers were designed to conform to New York City code requirements. **Cyclotherm Div., National-U. S. Radiator Corp., Oswego, N.Y.**

For more details circle #749 on mailing card.

(Continued on page 96)

Fully Automatic Operation for Washer-Extractor

The Glover Auto Feeder is a compact washer-extractor, occupying only 465 feet of floor space. The 60-pound, fully automatic unit is simple to operate, requiring only a few minutes of the operator's time to load the machine and add the first suds through the soap chute. The operator is then free for other duties while the machine completes the washing and extracting cycle.

Glover Auto Trol controls are fully automatic, eliminating possibilities of human error in washing, rinsing and extracting. The two-pocket type machine permits loading of the wash equally into

each pocket for perfect cylinder balance. Quality wash for each load is assured by the automatic controls. **The Bill Glover Co., 5204 Truman, Kansas City 27, Mo.**

For more details circle #750 on mailing card.

durable AND Smart FURNITURE

Wall-Saving Easy Chair

No. 610

Also available, a wide assortment of chairs and tables for dormitory, social room, dining room and other uses.

See your dealer or write us for our distributor's name.

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BEAUTIFUL TURF. Maintain beautiful lawns with Roseman Hollow-Roller Drive Mowers, for improved appearance, increased efficiency and lower costs.

IMPROVED APPEARANCE. Exclusive Roseman roller design overhangs curbs, flower and shrubbery beds without drop-off. Unsightly fringe and costly hand trimming eliminated all in one operation.

LOWER LABOR COST. Greater mowing speed, increased mowing capacity and elimination of hand work substantially reduce mowing costs. Hydraulic lift models offer quick, easy transport between locations.

QUALITY BUILT. Non-breakable side-frames . . . Bed-knife and cutting reel precision tempered and riveted (not welded) . . . Timken adjustable reel bearings . . . assure years of trouble-free service and minimum of repair costs.

Available in 3, 5, and 7 gang sizes. Towed and hydraulic lift models.

Roseman Hollow Roller Mowers are designed to mow your turf areas at the least possible cost. They will do just that.

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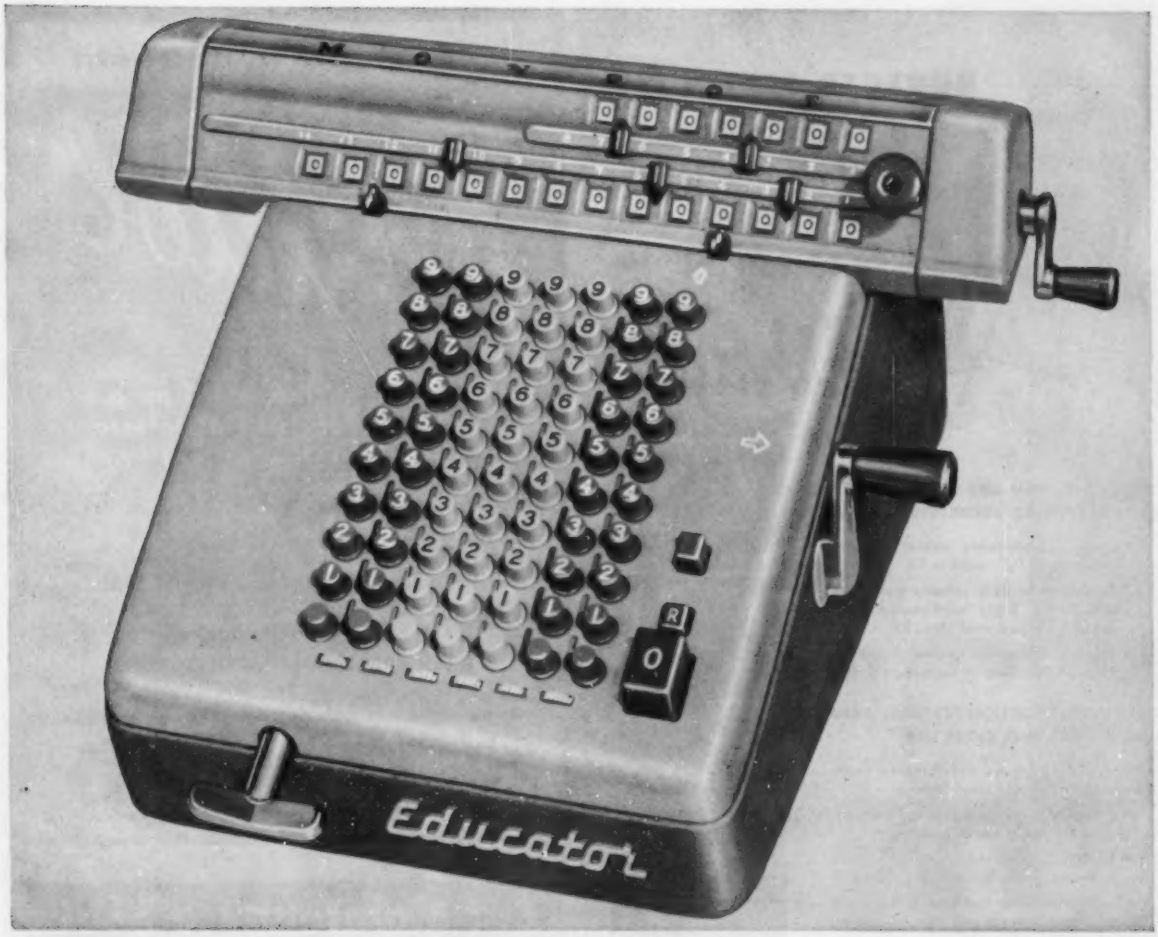

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GAIN MORE IN REASONING ABILITY

With the Monroe Educator to handle basic computations mechanically, students in courses involving mathematics have their minds free for thought processes . . . develop *greater reasoning power* in their studies.

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ADDING
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provides more comfortable, longer lasting seating than you've ever known

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COMFORT AS YOU LIKE IT — WITH EXTRA LARGE SEATS AND BACKRESTS

- Larger, comfortable contour-shaped seats — 15½" wide x 16" deep
- One-piece contour shaped steel seat (No. 81) or 5-ply hardwood veneer contour shaped seat (No. 82)
- Smooth, baked-on enamel finish in Beige, Azure Grey or Saunder's Green

STURDY CONSTRUCTION FEATURES ASSURE LONGER THAN EVER CHAIR LIFE

- Heavy 18-gauge electrically seam welded tubular steel frames
- L-shaped steel cross bar beneath seat for extra backing strength
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- Tubular steel leg stretchers on front and rear legs increase frame rigidity
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DESIGNED AND ENGINEERED FOR COMPLETE SEATING SAFETY

- Non-marring, annular design rubber feet tightly secured over steel dome gliders prevent floor skidding
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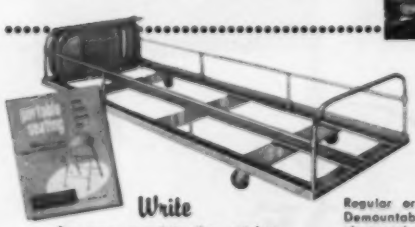
- No sharp edges—all are fully rolled and beaded to protect against injury
- Non-tipping Y-type design permits edge of seat sitting without tipping



Demountable
CHAIR TRUCKS

Seven standard sizes hold both X-type channel or Y-type tubular chairs—upright or horizontal. Regular or under-stage models. Demountable ends and exclusive chan-angle frames permit stacking empty trucks one on the other.

Write
For new, complete line catalog No. 700 as well as brochure 100.

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METAL PRODUCTS • GREEN BAY • WISCONSIN

Leaves air mint fresh!

Mintol

the multi-purpose industrial disinfectant with the fresh mint leaf aroma

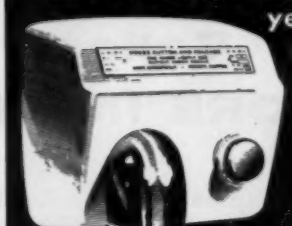
MINTOL disinfectant has a coefficient of 9. Diluted half a cup to the pail of water, it meets the new Use Dilution Confirmatory Test.

SANITIZES THE SURFACE
KILLS BACTERIA DEODORIZES

For free sanitary survey of your premises ask your Dolge service man

Dependable DOLGE
WESTPORT, CONNECTICUT

Cut Maintenance $600
yearly per unit with
WORLD Hand Dryers



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Each high speed WORLD Hand Dryer can save up to $600 per year on paper and maintenance . . . dry hands fast as towels . . . keep washroom clean and sanitary.

Prove it to yourself under our FREE trial offer! Full details on request.

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Gentlemen: Without obligation send me copies of letters from users, also folder of facts including cost-saving figures and full details on your FREE-TRIAL offer.

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Model 130 can be carried from job to job easily.

TWO LIGHTWEIGHTS—girl and TORNADO® PACK A HEAVYWEIGHT CLEANING PUNCH

In a matter of a few effortless minutes—and with the Tornado Model 130 (13") Floor Machine—this girl, at Birnn's Candy Shop in New Brunswick, New Jersey, has floors sparkling clean easily.

And it's no wonder!

Because, this Tornado Model 130 is the first machine to combine necessary weight and power to do quick, efficient scrubbing and polishing—yet light enough for complete ease of operation by anyone. Controls gently, has none of the usual floor machine "whip" . . . the lightest woman operator uses it like a "professional." And all this power, performance and efficiency is well within the economic reach of every business and institution.

Try this lightweight marvel on your floors today!

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What's New . . .

Typist's Posture Chair Is Adjustable

The new Desks of America Typist Posture Chair, Model No. 48, has three

positive handwheel adjustments to allow students of any stature to sit correctly and comfortably. The seat and back are constructed of curved plywood for added comfort. Sturdy metal chair frames are available in any color to match existing equipment. **Desks of America, Inc., Bridgeport 6, Conn.**

For more details circle #751 on mailing card.

Black Spirit Carbon for Direct Process Duplicators

Ditto's new Black Hi-Gloss carbon produces 100 and more black-on-white copies on any spirit duplicator, using regular duplicator fluid. Preparation of masters is the same as for conventional purple spirit carbon. Paper and hands stay clean as the carbon surfaces and edges are chemically treated to prevent staining or smudging. Hi-Gloss is available in 8½ by 11 and 8½ by 14 inch sizes in single carbon sheets or in Masterset form. **Ditto, Inc., 6800 N. McCormick Rd., Chicago 45.**

For more details circle #752 on mailing card.

Fresh Lemonade Now Available in Cartons

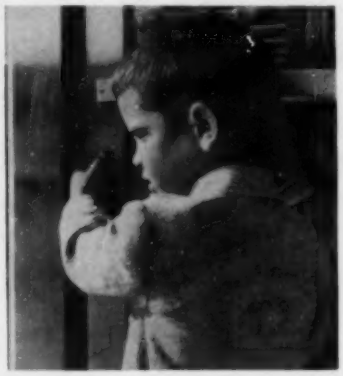
After careful research in a test market, fresh Sunkist orange and lemonade are now being made available nationally through local dairies. The fresh frozen juices of oranges and lemons are delivered to carefully selected dairies with the facilities for making up the fresh orange juice drink and fresh lemonade under sanitary conditions. The resulting flavorful and nutritious beverages are offered in half pint paper containers similar to those used for milk. Students may thus have the fresh fruit drinks readily available through the school cafeteria or vending machines.

Dairies licensed to use the Sunkist name and product are carefully selected and part of the licensing agreement includes proper mixing, sanitation, freshness and care in handling. **Sunkist Growers, Products Dept., 720 Sunkist St., Ontario, Calif.**

For more details circle #753 on mailing card.

Fing-R-Gard Edge for Entrance Doors

A newly developed flexible vinyl plastic edge is now available for steel entrance doors. The Fing-R-Gard edge protects against crushed fingers when caught in a closing door. At the same time, it is completely weatherproof and seals out cold, heat and moisture. Formed



in the shape of a "U", the extruded vinyl plastic Fing-R-Gard edge is attached as an integral part of the door. **Overly Mfg. Co., Greensburg, Pa.**

For more details circle #754 on mailing card.

(Continued on page 98)

LOSE NO TIME IN CLIMBING ABOARD A

Locke

POWER LAWN MOWER

FOR A DEMONSTRATION!

In minutes you'll see why LOCKE is Americas most wanted power mower and trimmer! How, with the first cut, the LOCKE does a *complete job in one operation* ...overhanging raised borders to make a clean cut...leaving no uncut rolled down grass...eliminating secondary hand trimming operations...thus, saving up to 50% of your time. Examine it closely! See how ruggedly built it is for long-life, and how the exclusive features afford unheard-of maneuverability, making it the *most versatile, efficient power mower and trimmer for your money.*

But don't take our word for it! See it, try it ...buy it! You'll never switch power mower brands again.

4 Basic Sizes:

- ★ *25", 30", 70", 75".*
- ★ *Single or Triplex Models. Riding Sulkies.*
- ★ *70" and 75" available with reverse gear.*
- ★ *Briggs & Stratton Motors.*

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Locke

POWER LAWN MOWERS

1321 Connecticut Avenue, Bridgeport 1, Conn.

A product of The Locke Steel Chain Co.

Steelcase Custom Line... filling a special administrative need.

New STEELCASE CUSTOM LINE ... an old friend of the family

In the past, chief business officers, deans and college presidents too, have expressed a desire for a distinctive type of furniture which could be used for private offices . . . for that "special wing" in the new building . . . furniture which, while significantly different, would still be in harmony with design and construction of their present equipment.

The Steelcase answer is its new Custom Line. Here is office furniture styling, beauty, convenience and efficiency conceived in a new and refreshing manner. Yet, if you take a second look, it is distinctively Steelcase. It has the same design continuity which makes it the perfect tie-in for your standardization program.

See the Custom Line soon. You will want to make it a supplementary part of your continuing program of office expansion and you will immediately understand why we say the new Custom Line . . . is an old friend of the family.

Steelcase Sunshine-Style office furniture... the first choice of business, education, industry and commerce for over 45 years.

May we help?

A note from you will bring you our new Steelcase Showcase brochure showing the Custom Line in full color. Just write Department C.

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What's New . . .

Instant Water Service By Light-Beam Control

When the light beam is broken by placing a glass or cup under the spout,

water pours instantaneously without pressure on levers or pedals in Electro-Fill Water Stations. Two new models are now available, the B-1260 Deck Type and the B-1265 Wall Type. The fully automatic water service unit saves time and also glass breakage. It is sanitary, fast and economical in operation, engineered for trouble-free performance. Complete sets of parts for the two new models are furnished, with instructions for easy installation. **T & S Brass & Bronze Works, Inc., 32 Urban Ave., Westbury, L.I., N.Y.**

For more details circle #755 on mailing card.

Wood Grain Wall Panel for Interior Walls

The new Masonite Seadrift decorator Wall Panel has a wood grain pattern embossed into the surface of durable ¼ inch Tempered Presdwood. It can be easily nailed, screwed, jointed, planed, beveled, sanded and sawed and will not split, splinter or crack. Seadrift is available in panels four feet wide and up to 16 feet long and may be finished in a single tone or two-tone paint, enamel or lacquer. **Masonite Corp., 111 W. Washington St., Chicago 2.**

For more details circle #756 on mailing card.

Paper Towel Is Highly Absorbent

The new Scott Ultra High Absorbency Paper Towel has a contoured surface appearance which resembles fine cloth. The stippled surface provides greater porosity, bulk and thickness which absorb water quickly. Chemicals added to the paper pulp during processing produce a high wet strength which allows the towel to be used without tearing or shredding. Towel consumption is reduced as only one Scott towel usually is needed to dry face and hands. The No. 151 towel measures 10-7/16 by 14 inches and is packaged 150 towels to a board sleeve. **Scott Paper Co., Chester, Pa.**

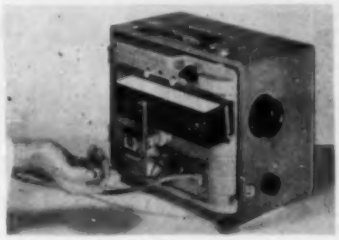
For more details circle #757 on mailing card.

(Continued on page 102)

Slide Projector with Automatic Changer

The new GoldE Auto-Mark 500-watt projector is equipped with a remote control fully automatic slide changer for all two by two color slides. The changer handles all types of mounts through its open-channel design, which eliminates most slide-jamming problems. The changer can be operated remotely by a push button on the end of a 15 foot remote control cord or manually, without using gears and clutches, for easy slide selection.

Other construction features include improved Whirl-Cool system, full color-corrected lens which is automatically protected by a reenforced metal plate when retracted into the case, and easy



access to all working parts. The projector is built into its own Glacier Blue case and weighs 17 pounds. **GoldE Mfg. Co., 4888 N. Clark St., Chicago 40.**

For more details circle #758 on mailing card.

TUBULAR STEEL FOLDING CHAIR NUMBER 76

THE ANSWER TO PUBLIC SEATING PROBLEMS

Looking for a chair that will take heavy abuse and still retain a fresh, new appearance? Here it is — Hampden's No. 76 — a chair that is built to take it. Chip resistant finish, tubular steel construction, handsome design and appearance make this first choice with people who know public seating requirements.

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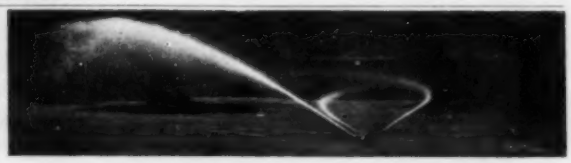
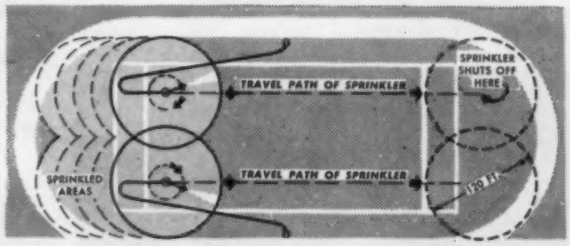
Write Department 13D for illustrated brochure of complete line



the ADAMSON MOVING BASE SPRINKLER engineered for SCHOOL ATHLETIC FIELDS



AUTOMATIC IRRIGATION with MINIMUM PIPING

Adamson Moving Base Sprinklers provide automatic irrigation without the expense of elaborate pipe systems or the danger of outlets on the playing field. Self-moving, each unit gives even rainfall over an acre or more of turf in as little as five hours. These sprinklers are adaptable to extremely low pressure.

Complete literature on request. If demonstration desired send field dimensions with location of outlets and approximate water pressure.

ADAMSON SPRINKLER COMPANY
2228 BARRY AVENUE, LOS ANGELES, CALIFORNIA

WHEN MAINTENANCE PROBLEMS BAFFLED US . . .

I found there is a man who knows!

I don't mind telling you I was worried. Every month our labor costs seemed to get higher and higher, yet the gym floor didn't look too good, and hallways were beginning to show real signs of wear. Before the school board started asking questions, I started looking around for somebody who could help give us the answer.

The very first thing the Huntington man did was to study our operation and see how the job could be improved. He gave demonstrations and showed our maintenance people the best way to sweep a floor, wax a hall, and a lot of short cuts as well as how to do their jobs more efficiently.

As a result, our total maintenance cost was cut by about 45%, and everybody is happy. Because you see, it is a combination of the experience of the Huntington representative and the high quality, specialized products he handles that made it possible for us to cut our cost almost in half.

What did it cost us for the services of this Specialist? Not one cent! If you have a problem—any kind of maintenance problem—I would suggest you find out who your Huntington representative is. All you have to do is write and ask for the name of the man behind the drum in your area.

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20° slope—ideal support and visual position for reading, writing, art work
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The exclusive 3-position top of American Seating's **No. 536 UNIVERSAL® Desk** is only one reason why it excels for student learning, performance; teacher guidance and control. Also has automatic fore-and-aft seat adjustment. Write for our complete-line, full-color school-furniture catalog!

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WORLD'S LEADER IN PUBLIC SEATING

HIGHER LEARNING SAVES YOUR CARPETS

DO YOU KNOW? *Tinolan* process was developed at a leading museum to restore priceless tapestries and other wool fabrics. It *revives colors* and *conditions* to renew the natural "*spring*."

Pile that has been matted by traffic and by scrubbing is remarkably improved and *Tinolan* conditioning removes the dirt "*attraction*" of soaps and detergents so rugs *stay clean longer*. Also, *Tinolan* mothproofs as it cleans.

Easier—Costs less Rugs and carpets can be treated without removal, are back in service the same day. *Tinolan* costs less than usual methods . . . less money . . . less work.

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The Tinolan Company of America, Inc., Wallingford Rd., Media, Pa.

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FIRE AND PANIC EXIT DEVICES

B2 device

● Von Duprin quality is the best assurance of "the safe way out"! For Von Duprin fire and panic exit devices are virtually timeless in their ability to protect lives against that "once-in-a-lifetime emergency" or defy the rough wear of daily traffic. Superior Von Duprin design, close inspections, the use of only quality materials, insure unfailing dependability. Result: Von Duprin devices are trusted by architects, hardware consultants and safety-minded officials . . . used in outstanding buildings of all types.

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A SCHOOL PLANNED FOR *modern* EDUCATION

SENIOR HIGH SCHOOL, NORMAN, OKLA. • ARCHITECTS, CAUDILL, ROWLETT, SCOTT & ASSOCIATES, OKLAHOMA CITY • Photo Hedrich-Blessing

The architects, by patient study and imaginative planning, have designed a school that, though striking a modern note throughout, sacrifices nothing in the way of roominess, comfort, convenience and appointments. In this edifice you will find Halsey Taylor drinking water equipment, with all their advantages of health-safety and utility! The Halsey W. Taylor Co., Warren, Ohio.

You can select from a full line of wall, battery or pedestal fountains, as well as coolers.

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Write for latest catalog or see Sweet's

FOUNTAINS • COOLERS

ENGINEERED THE BEST TO MEET EVERY SERVICE TEST

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CHUTES

FOR CENTRALIZED DISPOSAL OF RUBBISH WASTE PAPER, SWEEPINGS, SOILED LINEN IN COLLEGES, UNIVERSITIES, ELEMENTARY SCHOOLS, HIGH SCHOOLS, DORMITORIES ETC.

With high operating expenses for housekeeping personnel, chute costs can be written off in several years — therefore —

WILKINSON CHUTES DO NOT COST MONEY BUT SAVE MONEY

Fire Protection provided with Underwriters Laboratory Inc. approved doors when required

Automatic sprinklers provided as standard equipment

Stainless steel and aluminum used exclusively

Efficient, Inexpensive and Foolproof

For further information and list of College and University installations contact

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Represented in all principal cities

Micro Opaque Reader Accepts Any Micro Data

Micro data cards up to nine inches in one dimension and unlimited in the

other are easily placed in position and moved from frame to frame with the new AO Micro Opaque Reader. Material faces up in plain view of the operator on the opaque reading screen which offers eye-reading comfort. The large screen is 11 by 12⅞ inches and has a 15 degree comfortable reading angle.

Other features of the reader include three easily interchangeable objectives, focus knob adjacent to operator, off-on finger tip switch and foot switch available for photocopy timing. A cast steel frame for optics assures permanent optical alignment and fan cooling prevents heat damage to cards. The unit is finished in two-tone gray and charcoal baked-on wrinkle enamel and weighs only 23 pounds. **American Optical Co., Instrument Div., Buffalo 15, N.Y.**

For more details circle #759 on mailing card.

Spirit Duplicators in Five Sizes

Developed in Italy, the Duplicarbo Spirit Duplicator is now being made available in the United States and Can-

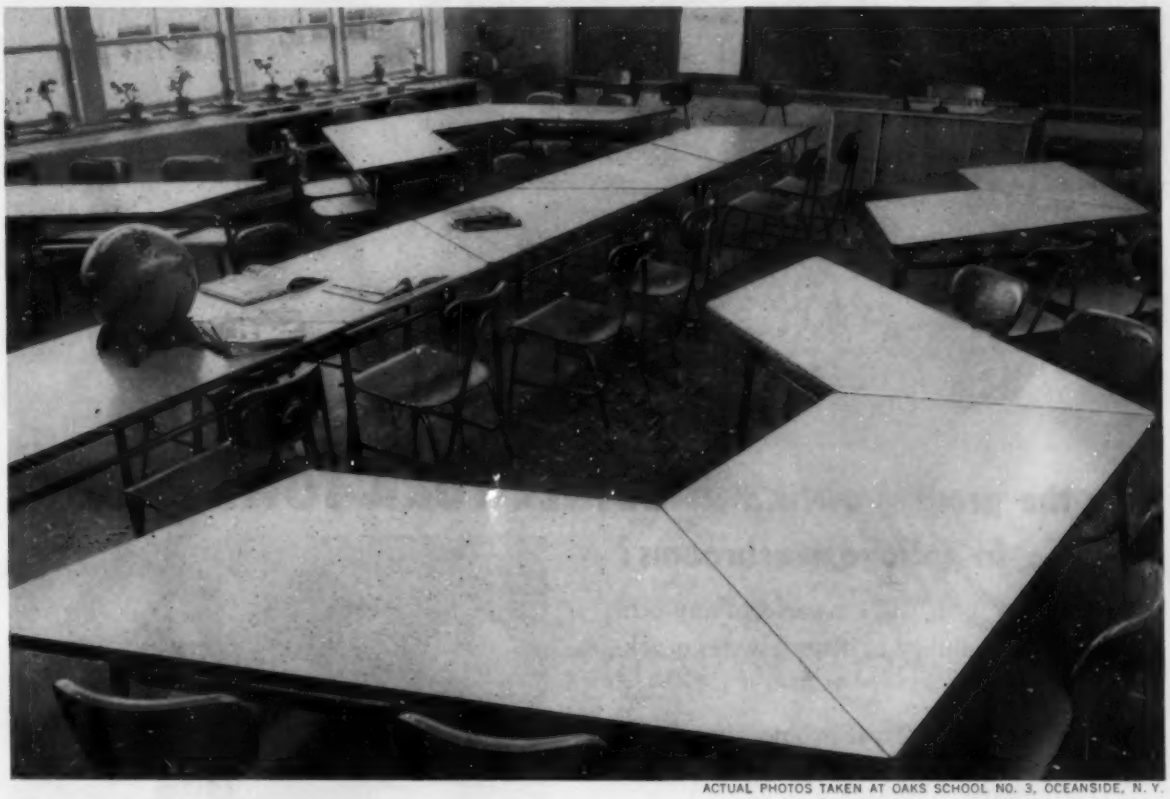
ada. Five models, for manual or electric operation, in three sizes, are offered. The electric models offer either single sheet or continuous automatic feeding. The models feature fluid control, pressure dial, accurate registration with reset counter, precision geared pump, automatic master clamp and other facilities. The die cast frames are of duraluminum and the machines are finished in gray hammertone with chrome and nickel trim. **Du Prints, Inc., 1502 S. Main St., Los Angeles 15, Calif.**

For more details circle #760 on mailing card.

(Continued on page 104)

America's chief "wrecking-crew" can't hurt

Samsonite Classroom Furniture



ACTUAL PHOTOS TAKEN AT OAKS SCHOOL NO. 3, OCEANSIDE, N. Y.

Classroom furniture not only has to be smart and comfortable, it must be able to withstand the phenomenal abuse pupils give it. Samsonite Classroom Furniture does all this. It's engineered with the newest, strongest, anti-mischief defenses in classroom furniture!

- Self-locking fasteners cannot be loosened with coin or knife.
- Countersunk rubber bumpers on desk lid cannot be pried loose.
- Tubular steel frame construction provides lightness of weight with no sacrifice of strength whatsoever.
- Resistance-welded joints are as strong as the frame itself!
- Electrostatically-deposited enamel on bonderized metal is non-chalking and resists abrasion and chipping.
- Tablet arm and desk supports are made of continuous-length steel tubing.
- Plastic back support insures proper distribution of stresses.

Dr. Walter S. Boardman, Superintendent of the Oceanside Public Schools, Oceanside, New York, says "Samsonite Classroom Furniture has fully met our expectations both in appearance and durability. It is comfortable, practical and requires a minimum of maintenance!"

Samsonite.... *strongest.... lasts longest*

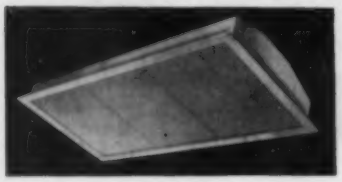
Shwayder Bros., Inc., Classroom Furniture Division, Dept. CU-4, Detroit 29, Mich. Also makers of famous Samsonite Luggage, Institutional Seating and Card Tables and Chairs for the Home. Merchandise available in Canada from Samsonite of Canada Ltd. Queens Highway, East, Stratford, Ontario

Visit the Samsonite Booths #A35 and A37 at the National Catholic Convention, April 23-26!

What's New . . .

Recessed Troffers Fit Many Ceiling Systems

Eight new models of two inch wide Guth Recessed Troffers have been de-



signed to fit 83 different ceiling suspension systems. The new models feature the Gratelite louver diffuser for high illumination intensities with low brightness. Skytex and low brightness lenses are also available. The troffers are available in two and four inch lengths, in two, three and four light units, and are constructed of heavy gauge, zinc-coated and bonderized steel. **The Edwin F. Guth Co., 2615 Washington Blvd., St. Louis 3, Mo.**

For more details circle #761 on mailing card.

Wheeled Carrier for A-V Equipment

Audio-visual equipment can be easily wheeled to classrooms, auditoriums and other areas on the new Standard Wheelit. This mobile projection table can be wheeled up and down stairs, as well as on the level. This is accomplished because of the two large 12 inch wheels equipped with ball bearings and semi-pneumatic tires.

The Model C-402 Wheelit has a 16 by 21 inch top shelf or table 40 inches above the floor for holding the projector. It is made of thick sound-asbsorbing plywood covered with scuff-resisting Formica. Two other shelves carry equipment, accessories, film and screen. A web belt with buckle is supplied for securing equipment for safe transportation. The all steel frame, finished in silver gray and chrome, folds down to 14 by 40 inches, including the fold-down handles, for compact storage and portability. **Gruber Products Co., 2223 Albion St., Toledo 6, Ohio.**

For more details circle #762 on mailing card.

Shuffleboard Set with Rubber Cushioned Discs

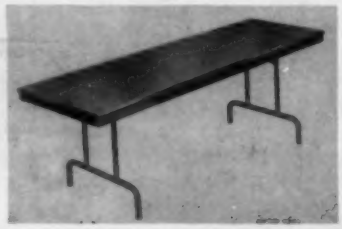
Jayfro Shuffleboard Sets are now offered with rubber cushioned discs. A solid band of rubber is permanently grooved around the disc to minimize breakage and noise during play. Either side of the disc can be used.

Other equipment in the set includes lightweight aluminum cues, removable hardwood cue heads and plastic molded cue handles. Both regulation and junior size sets are available. **Jayfro Athletic Supply Co., P.O. Box 1065, New London, Conn.**

For more details circle #763 on mailing card.

Folding Table Has Fiberesin Top

The Barricks 2100 Series Folding Tables have been introduced with "Supr-Lyte" tops made of Fiberesin solid plastic. The surface resists fruit acids, burns, chipping, water and heat making the series practical for the hard wear of institutional use. The tables are lightweight yet assure maximum seating capacity with comfort and durability. They incorporate all construction fea-



tures of other Barricks tables, including patented Leg Lock which permits fingertip opening and folding. **Barricks Mfg. Co., 134 W. 54th St., Chicago 9.**

For more details circle #764 on mailing card.

(Continued on page 106)

Why the great growth of MOSINEE TURN-TOWL SERVICE in college washrooms?

1. The towel itself will outperform any other towel for its ability to absorb water quickly, thoroughly.

2. Controlled Turn-Towl cabinet dispensing cuts towel consumption from 40% to 50%.

3. Cabinet holds 417 towels. This, plus fewer used towels to handle, keeps maintenance time and costs at a minimum.

4. Low cost of Turn-Towl service benefits citizens who pay college costs.

Find out how Turn-Towls can save you money . . . improve *your* washroom sanitation. Get complete details by mailing the handy coupon below.

MOSINEE
Sulphate Towels
BAY WEST PAPER CO.
1110 West Mason Street
GREEN BAY • WISCONSIN
Subsidiary of Mosinee Paper Mills Co.

CLIP THIS COUPON AND MAIL IT TODAY

BAY WEST PAPER COMPANY
1110 West Mason Street, Green Bay, Wisconsin

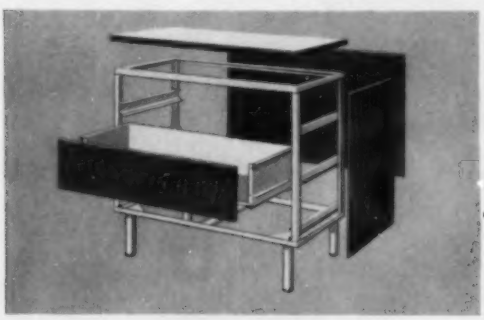
Please send me the free Turn-Towl Kit with complete information on Turn-Towl Service.

Name .....
Firm .....
Address .....
City ..... Zone ..... State .....

SIR LAUNCELOT LAUDS A LEADER!

Built-Ins in new *WOODRIDGE . . . by Royal!*—a new and stimulating space-saving concept of dormitory room arrangement.

Here's an off-the-floor combination of two Wardrobes, three Storage Cabinets, a Six-Drawer Chest and Mirror all making up a single unit that is quickly and easily installed. Wardrobes and Cabinets may be 30", 36", or 48" wide. All are 24½" deep. Height is 95½", overall—just right for 8-ft. ceilings.



Dealers and Showrooms Coast to Coast

WOODRIDGE . . . by Royal has "skyscraper" steel inner-frames and individually removable wood panels and plastic tops for simplified maintenance. "The Beauty of Wood . . . The Strength of Steel" now can be yours in Single Dressers, Double Dressers, Desks, Nightstands, Beds, and Built-Ins—all in good-looking, new *WOODRIDGE . . . by Royal.*

A request on your school letterhead will bring you complete information promptly.

IN METAL FURNITURE IT'S Royal SINCE '97

ROYAL METAL MANUFACTURING COMPANY
1 Park Avenue, New York 16, N.Y., Dept. 19E
In Canada: Royal Metal Manufacturing Co. Limited, Galt, Ontario

What's New . . .

Literature and Services

• A new booklet entitled **"Finest food serving equipment for Schools, Colleges and Universities"** has been prepared by Southern Equipment Co., 4550 Gustine Ave., St. Louis 16, Mo. The 48-page booklet illustrates typical school installations of Southern equipment, and discusses in full detail, including floor plan of each, how an efficient food service system has been set up to fill all types of individual requirements.

For more details circle #765 on mailing card.

• **Floor Maintenance Equipment and Supplies** available from Finnell System, Inc., 4400 East St., Elkhart, Ind., are covered in a new Finnell four-page folder. Scrubbing, waxing, polishing and mopping equipment, and waxes, sealers and cleaners are described in the folder which features the new No. 213P Combination Scrubber-Vac for heavy duty floor care.

For more details circle #766 on mailing card.

• **"Spintex Duct Insulation"** is the title of a new folder which explains the insulating value, fire safety and easy application of Spintex for insulation of air conditioning ducts. Available from Johns-Manville, 22 E. 40th St., New York 16, the folder also includes physical and thermal property data and a table of standard sizes and thicknesses.

For more details circle #767 on mailing card.

• How room dividers and aluminum stair railings can be constructed from matching elements is described in the new catalog issued by Blumcraft of Pittsburgh, 460 Melwood St., Pittsburgh 13, Pa. **Catalog M-57** also includes details and illustrations of design possibilities with the units which are supplied to ornamental metal fabricators who build the railings on the job.

For more details circle #768 on mailing card.

• **The Norman Gas-Fired, Forced-Air Schoolroom Heating and Ventilating System** is the subject of a new four-page folder published by Norman Products Co., 1150 Chesapeake Ave., Columbus 12, Ohio. Printed in three colors, the folder presents technical drawings of the Norman furnace and enclosure units, Util-i-Duct bookshelf sections and outside wall openings. A complete description of the Norman individual classroom package is presented in the folder.

For more details circle #769 on mailing card.

• **Allied's 1956 Electronics Catalog** includes a large selection on radio, TV and electronic parts and equipment for school use. **Catalog No. 160** contains 356 pages listing over 27,000 items, including Knight Electronic Kits and public address amplifiers. The catalog is available from Allied Radio Corp., 100 N. Western Ave., Chicago 80.

For more details circle #770 on mailing card.

(Continued on page 108)

• Information on **Blue Lake Green Beans** is offered to quantity food users by Associated Blue Lake Green Bean Canners, Inc., Portland 5, Ore. Included are operator-tested ideas and quantity recipes developed by users.

For more details circle #771 on mailing card.

• An illustrated folder entitled **"Kodak Motion Picture Films and Equipment for Sports Analysis"** is available from Eastman Kodak Co., Rochester 4, N.Y. It describes the capabilities of 16mm cameras, lenses, film and projectors, including the Kodascope Analyst II Projector which was designed specifically for the needs of coaches and athletic directors.

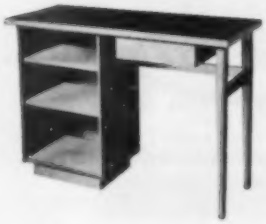
For more details circle #772 on mailing card.

• Six different styles of **Korok Steel Chalkboard** are described and illustrated in a new eight-page catalog issued by the Korok Division, The Enamel Products Co., 341 Eddy Rd., Cleveland 8, Ohio. Data on the new Korok direct-to-wall application are included, as are complete specifications and detailed drawings of all chalkboards in the line.

For more details circle #773 on mailing card.

• Power-Pak packaged automatic boilers for steam or hot water heating and hot water service are described in **Bulletin No. 1233** issued by Orr & Sembower, Inc., Reading, Pa. Complete details are included on all units.

For more details circle #774 on mailing card.



dormitory room—172 group
bunk beds 172-66, chest 172-21, mirror bulletin board 172-23, double student desk 172-45, desk chairs 5622, lounge chair 1006.

single student desk 172-40
w. 42", d. 18", h. 30".

Other desk sizes and chair styles available.

dormitory group

by **THONET***

The simple, attractive design of this 172 group provides maximum livability in a minimum of space.

*For more than 100 years specialists in the manufacture of all types of institutional furniture.

Write us about your needs, and we will send you additional information.

THONET INDUSTRIES, INC., Dept. H
ONE PARK AVENUE, NEW YORK 16, N. Y.

THONET INDUSTRIES INC

SHOWROOMS: NEW YORK, CHICAGO, DALLAS, LOS ANGELES, MIAMI, STATESVILLE, N. C.

DECIDEDLY BETTER
DAY-BRITE
Lighting Fixtures

DAY-BRITE LIGHTING MAKES THE BIG DIFFERENCE HERE

No back-seat lighting problem here!

No glare or "hot spots." No eye-straining shadows. Back-row students see as well, learn as fast as those up front. Uniform, *over-all* illumination is just one of the Day-Brite lighting features you won't find in so-called "bargain" substitutes.

Day-Brite fixtures are easier to install, give students *years* of better illumination, are easy to maintain. And here's an easy way to *prove* these Day-Brite claims to yourself:

Get samples of all fixtures. Make your own comparison. Be critical. Move in close. That's where you actually *see* all the Day-Brite quality differences. Your Day-Brite representative will gladly help you set up a test. He's listed in your Yellow Pages.
Day-Brite Lighting, Inc., 5452 Bulwer Avenue, St. Louis 7, Mo.
Day-Brite Lighting, Inc., of California, 530 Martin Avenue, Santa Clara, Calif.

NATION'S LARGEST MANUFACTURER
OF COMMERCIAL AND INDUSTRIAL
LIGHTING EQUIPMENT

Biology room, Archbishop Hoban High School, Akron, Ohio, lighted with Day-Brite Luvex® fixtures in a "U" pattern.

71130

What's New . . .

• The story of phone dictation is told in a 16-page booklet entitled **"That New Fashioned Phone Dictation System Is Edison Televoice."** Published by Thomas A. Edison, Inc., West Orange, N. J., the brochure discusses such subjects as "Why Instrument Dictation," "Why Phone Dictation" and "The Simplicity, Speed, Versatility, Economy and Appeal of the Televoice System," with details on the units comprising the system.
For more details circle #775 on mailing card.

• The Stenorette, a magnetic tape machine for dictation, recording of interviews, conferences, meetings and teaching, is described in a booklet, **"How to use the Stenorette,"** issued by DeJur-Amsco Corp., 45-01 Northern Blvd., Long Island City, N.Y. The lightweight machine, made in Germany, has a number of interesting features.
For more details circle #776 on mailing card.

• **The Lawler Line of Thermostatic Control Valves** is described and illustrated in a new eight-page condensed Catalog No. C-7 issued by Lawler Automatic Controls, Inc., Mt. Vernon, N.Y. Engineering data cover the complete line of shower mixing valves, steam temperature regulators, water controllers, and photographic temperature control assemblies, tempering valves and other products.
For more details circle #777 on mailing card.

• **Lexsuco Fire Retardant Roof Construction** is the subject of a new catalog prepared by Lexsuco, Inc., 4815 Lexington Ave., Cleveland 3, Ohio. The simple steps for assured fire and vapor protection in built-up roof construction are illustrated and described.
For more details circle #778 on mailing card.

• The place of turkey in relation to high protein content is told in a new booklet, **"Turkey . . . Highest in Protein, Low in Fat,"** prepared by The National Turkey Federation, Mt. Morris, Ill. It discusses and compares the nutrient composition as well as the protein and energy content of turkey with various other meats and shows how turkey meets the nutritional needs of institutions.
For more details circle #779 on mailing card.

• **"Acousti-Luminus Ceilings Bring You Perfect School Lighting"** is the title of a leaflet on the subject developed by Luminous Ceilings Inc., 2500 W. North Ave., Chicago 47. How these ceilings provide sound control and glareless light diffusion is illustrated and discussed.
For more details circle #780 on mailing card.

• The complete line of **Bennett Waste Receptacles** is illustrated and described in a new catalog issued by The Bennett Mfg. Co., Alden, N.Y. Complete specifications are given on the wide range of receptacles available in the Bennett line.
For more details circle #781 on mailing card.

Suppliers' News

Armstrong Cork Company, Lancaster, Pa., manufacturer of linoleum flooring, rugs and building materials, announces the opening of a new sales and warehouse building for its Cincinnati offices at **1057 Meta Dr., Cincinnati 37, Ohio.**

Chart-Pak, Inc., 104 Lincoln Ave., Stamford, Conn., manufacturer of printed pressure-sensitive tapes for graphs, charts and layouts, announces removal of all factory and office operations to a new plant at **Leeds, Mass.**

Hotpoint Co., Commercial Equipment Dept., 227 S. Seeley Ave., Chicago 12, manufacturer of electric cooking equipment, announces removal of the marketing, merchandising, product service, financial and engineering components of that department to **6201 W. Roosevelt Rd., Berwyn, Ill.** Manufacturing continues in the Chicago Heights, Illinois plant of the company.

W. J. Voit Rubber Corp., 2945 E. 12th St., Los Angeles 23, Calif., manufacturer of rubber-covered athletic equipment, announces its purchase by **American Machine & Foundry Co., 261 Madison Ave., New York 16.** Voit will operate as a wholly-owned subsidiary with no changes in personnel, it is reported.

MAYLINE

The Best In Tables for Drafting or Art

For a requirement covering both drafting and art, there is the C-7702 table, attractively priced. Base is oak. Top is Basswood. Send us your requirements for our quotation.

For the complete drafting table choose the Mayline C-7703B table. This offers a fine Basswood drawing top with metal edges, 6 individually and master keyed, roomy, equipment drawers, and a 6 compartment drawing board storage unit. Complete table reasonably priced. Mail us your bids.

MAYLINE MAYLINE

Symbol of MAYLINE *Superiority*

MAYLINE COMPANY INC.

525 North Commerce Street

Sheboygan, Wisconsin

C-7703B DRAFTING TABLE

MAYLINE

No. 1089U Padded seat and back—Naugahyde plastic upholstery, standard or elastic grade, choice of colors. Width, 16"; depth, 16".
No. 1089½ Slat back, padded seat—Naugahyde plastic upholstery, standard or elastic grade, choice of colors. Width, 16"; depth, 16".
No. 1089W Saddle wood seat, slat back. Width, 17"; depth 16½".

Save Your Walls with "WALL-SAVER" CHAIRS

These chairs pay for themselves by protecting walls from damage. Their flared back legs prevent "rocking" or tipping — chair can't scratch walls and woodwork. Sturdy and long-lived — solid birch construction. One piece steam bent apron and stretcher, reinforced corners. Metal cushion glides. All finishes available. Back height, 14½". Seat height, 18½". Weight, 18 lbs.

Write for Bulletin 1005-A

EICHENLAUBS
Contract Furniture
3501 BUTLER ST., PITTSBURGH 1, PA.
ESTABLISHED 1873

TO REQUEST PRODUCT INFORMATION FOLD THIS FLAP OUT AND USE THESE CARDS

(We pay the postage)

The two cards below are detachable and are addressed to us. With this flap folded out you can turn through the magazine for the items on which you want further information.

When, in either an advertisement or "What's New" you locate the product, turn to the index to advertisements on the preceding page or to the index of "What's New" items (right) where you will find the key number for the item. Items advertised are listed alphabetically by manufacturer. "What's New" items are in Key Number order. Circle the corresponding key number on the card below for each item in which you are interested. The second card is for the use of someone else who may also want product data.

Detach and mail—no postage required.

FIRST CLASS
CHICAGO, ILL.
PERMIT NO. 136
SEC. 34.9 P. L. & R.

BUSINESS REPLY CARD
No Postage Stamp Necessary If mailed in the United States

3 CENT POSTAGE WILL BE PAID BY

COLLEGE AND UNIVERSITY BUSINESS
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April, 1957

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NAME _____ TITLE _____

INSTITUTION _____

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769 Schoolroom Heating Folder
Norman Products Co.

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771 Green Bean Folder
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777 Catalog No. C-7
Lawler Automatic Controls, Inc.

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FIRST IN PRAISE!

Bolta®

America's leading source of trays

BOLTA TEMPO-TRAYS*

WORLD'S FIRST DESIGNER TRAYS!

BOLTA quality with a dash of fashion! Created by world's leading designers, they are available in 34 beautiful color-and-pattern combinations!

BOLTABILT

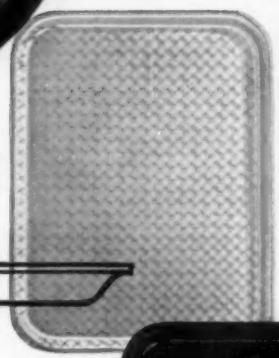
THE ALL-TIME FAVORITE

60% of the plastic trays used in America are BOLTABILT trays. Smooth-finish plastic with exceptional durability cuts replacement costs.

BOLTA CORK TRAYS

NON-SKID, CORK-TOP TRAYS

Cuts down breakage and noise. Durable non-skid surface grips dishes and glassware . . . makes serving safer and easier.



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SUPER-STRENGTH IN COLOR

Exclusive 17-layer lamination adds years of colorful use. Attractive linen, pearl and silhouette patterns and colors for every decor.

Here are trays that enhance every meal, every decor . . . trays that combine finest construction qualities with lasting beauty and wear! BOLTA TRAYS are impervious to cigarette burns and food acids . . . withstand abuse and normal dishwashing temperatures. Lightweight and non-clattering, they will not warp, split or stain . . . wipe clean to a gleaming surface!

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Toughest trays on the market! Made of rugged hard rubber, with handsome mahogany finish. Won't clatter when stacked or dropped.

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THE GENERAL TIRE & RUBBER COMPANY

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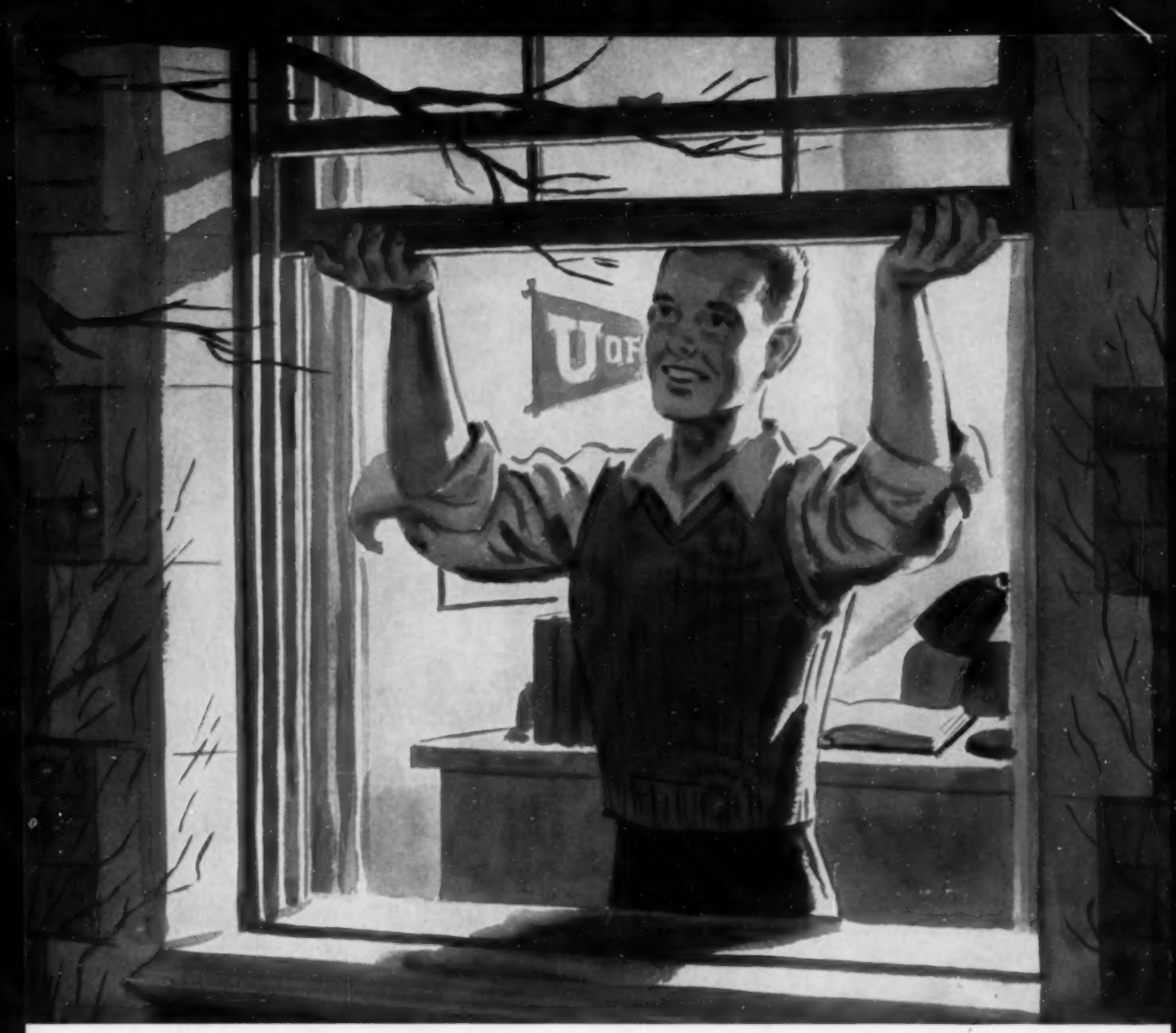
Specify Boltaflex for booths and furniture, Bolta Wall for interiors

*Designed for the STIMULUS collection of Schiffer Prints.



The Campus Spendthrift . . .

and you're picking up the tab!

Schools of all sizes are plagued by this fellow, yet he can't be recognized on the campus. He may be the robust football hero or the shy little freshman. But, as the "campus spendthrift," he's costing you countless dollars each year in unnecessary extra heating expense with his "open window" policy.

You can put a stop to this careless spending of your fuel dollars by eliminating dormitory room overheating. And, here's the practical solution to this problem—Johnson *Individual Room* Temperature Control!

With a Johnson Thermostat in each dormitory room, students can enjoy the room temperature most agreeable to their study and comfort requirements. Other Johnson controllers compensate for changes in outdoor temperatures and keep the heating system in balance with weather conditions.

Don't allow the "campus spendthrifts" to skyrocket your dormitory heating costs. Let an engineer from a nearby Johnson branch office show you, your consulting engineer, staff engineer or architect how a Johnson Pneumatic Control System can solve your dormitory temperature control problems, now!

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